(USAF) T. O. 12R5-2CRT3-2
(NAVWEPS) 16-30CRT3-2

HANDBOOK

MAINTENANCE INSTRUCTIONS

RADIO SET AN/CRT-3

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McGREGOR & WERNER, Inc. Syr., N.Y. 3/15/63 1800 REPRINT

15 SEPTEMBER 1955
REVISED 1 AUGUST 196

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Page No.	Date of latest Revision
25	1 Sept 1960
*26	1 Aug 1962
26A	1 Sept 1960
26B Blank	1 Sept 1960
44	15 Dec 1958
48	5 June 1957
52	30 Nov 1959

* The asterisk indicates pages revised, added or deleted by the current revision.

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SAFETY NOTICE

Do not raise the antenna during severe electrical storms. Observe this rule to prevent death or serious injury.

Observe the following precautions when using the hydrogen generator:

Permit no flames, coals, or sparks near the balloon or opened hydrogen generator, since hydrogen gas is explosive.

Do not allow the residue in the can to come in contact with the body or clothing, since it is caustic and will cause burns. Immediately wash in water any part of the body that is burned. Throw the hydrogen generator away immediately after use.

Do not touch the hydrogen generator while it is in use, since it generates large amounts of heat.

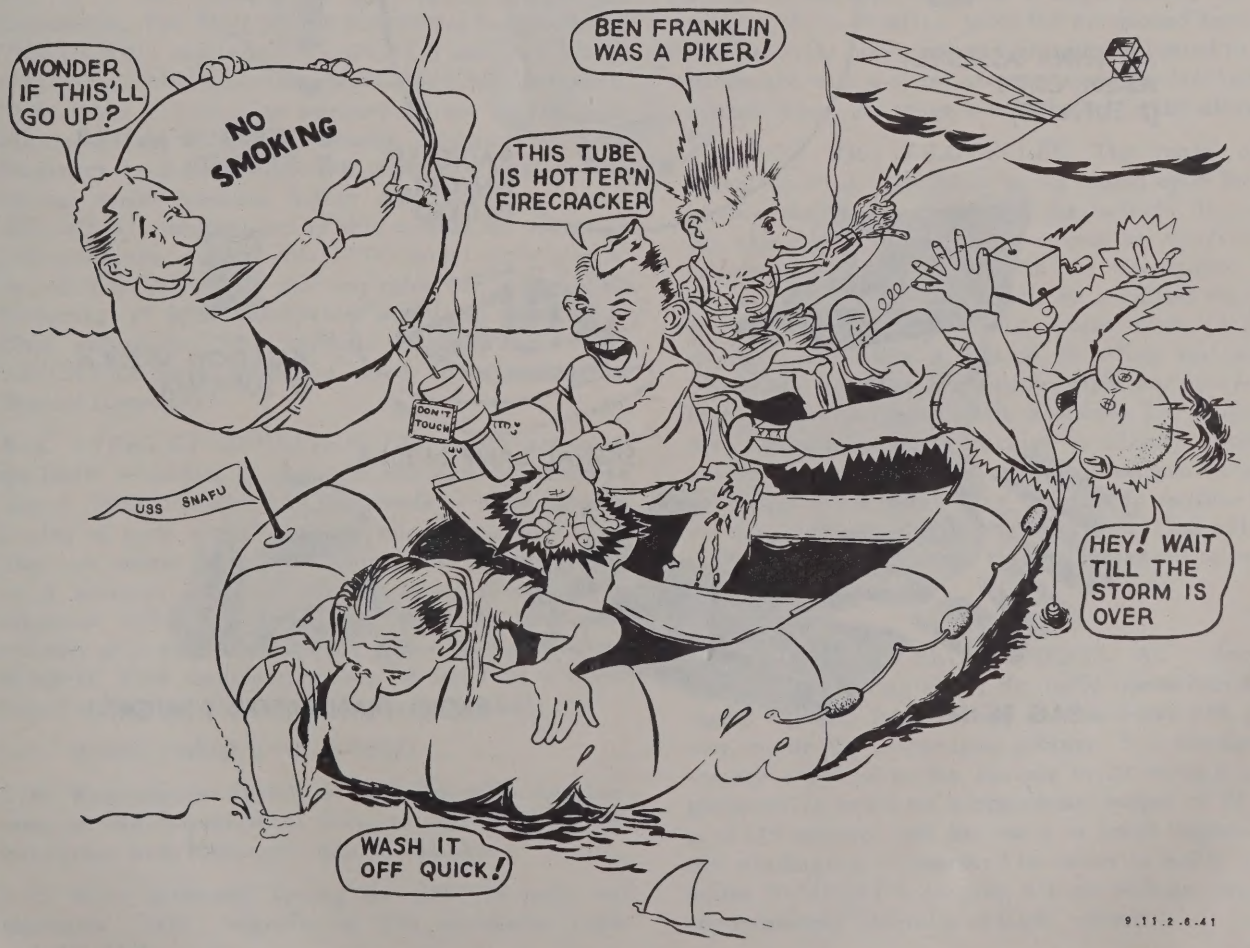


Figure 1–1. Radio Set AN/CRT-3–Major Assemblies

SECTION I
GENERAL DESCRIPTION

1–1. GENERAL.

1–2. PURPOSE. Radio Set AN/CRT-3 is a simple, rugged emergency transmitting system carried in aircraft and is designed for operation from a rubber life raft. The set may be dropped over water by means of the parachute supplied. Radio transmission is provided on two distinct frequencies intended for reception by two groups of stations, each having distinct rescue functions. Stations cooperating in rescue operations at long range generally make use of the 8364-kilocycle transmission whereas aircraft or ships locally engaged in rescue missions make use of the 500-kilocycle signal. The equipment is sufficiently buoyant to float and is brilliant orange-yellow, the color that gives the greatest visibility against dark backgrounds.

1–3. DIFFERENCE BETWEEN MODELS AN/CRT-3A AND AN/CRT-3. Radio Sets AN/CRT-3A and AN/CRT-3 are identical in all respects except the transmitter. The AN/CRT-3A transmitter is designated T-74A/CRT-3 instead of T-74/CRT-3 and has a high frequency of 8364 kilocycles instead of 8280 kilocycles. The higher frequency is attained by use of an 8364-kilocycle crystal and a variable capacitor. Low frequency is the same in both models. Kingston Sets having serial numbers higher than 9980 are model AN/CRT-3A. Instructions in this manual for operation and maintenance of the AN/CRT-3 model apply also to the AN/CRT-3A except that any reference to operating frequency of 8280 kilocycles would be changed to 8364 kilocycles. The variable capacitor in the AN/CRT-3A model permits a closer adjustment to the desired frequency.

1–4. TYPES OF OPERATION. The radio set automatically transmits in code the international distress signal (SOS). Provision is also made to allow manual keying of code signals on 500 kilocycles. Any operator, no matter how little training he has had, can send distress signals or messages which, when received, will permit bearings to be taken. The radio set may also be used to supply power for Signal Lamp M-308-B. This combination may be used as a hand-keyed signal light to convey messages visually.

1–5. RADIO FREQUENCIES USED.

1–6. When manual keying is used, the radio set operates on the international distress frequency of 500 kilocycles with 1000-cycle tone modulation.

1–7. When automatic keying is used, the radio set transmits SOS signals on 500 kilocycles (with 1000-cycle modulation), and 8364 kilocycles (without tone modulation). Automatic code sequence consists of six groups of SOS followed by a sustained dash transmitted alternately on 500 kilocycles and 8364 kilocycles. The frequency automatically changes every 40 to 50 seconds. Transmission on 8364 kilocycles is crystal controlled.

1–8. POWER OUTPUT. The power output is approximately 2-1/2 watts on 500 kilocycles and approximately 2 watts on 8364 kilocycles.

1–9. DISTANCE RANGE.

1–10. ON 500 KILOCYCLES. The signal on 500 kilocycles will be heard at distances from 200 to 300 miles under optimum conditions, that is, when transmitting at sea with the ground cap in the water. High atmospheric noise conditions reduce this range. At the center of an inland lake, the range will be 30 to 50 miles. At the edge of a lake or large stream, the range will be 10 to 20 miles, provided the ground lead is in the water. On land, with the ground cap buried in moist earth, and with a spare antenna assembly laid out as a counterpoise, the range may be only 5 to 10 miles.

1–11. ON 8364 KILOCYCLES. The range of the signal on 8364 kilocycles is dependent upon the time of day, the time of year, and the latitude. In general the signal on this frequency cannot be received at a relatively short distance from the transmitter, (i.e., within the skip zone) but will be received very well at greater distances. Thus, under some particular daytime conditions a station 50 miles and another 300 miles from the transmitter might not receive the high frequency signal while a station 500 miles from the transmitter might receive it clearly. Both the extent of the skip zone and the maximum range are greater at night than during the day. In daytime hours the maximum range may be from 750 to 1500 miles; at night the maximum range may be increased to several thousand miles.

1–12. POWER REQUIREMENTS. All electrical power for operating either the radio transmitter or the signal light is furnished by the hand-powered generator inside the transmitter cabinet. The average low voltage supplied to the chassis is 28 volts d c. The generator is rated for a continuous output of 28 volts at 0.175 ampere, and 300 volts at 0.040 ampere. The two windings are connected in series in Radio Transmitter T-74/CRT-3 to give a high voltage output of approximately 330 volts at 0.040 ampere.

1–13. OVER-ALL METHOD OF OPERATION. The signals from this dual frequency radio transmitting system are intended for two different types of receiving stations, each having a specific function in rescue work.

1–14. Fixed radio-direction-finding stations located on land in permanent or semi-permanent locations are expected to receive the 8364-kilocycle signals. Because of the long range of these signals and the numerous monitoring stations located throughout the world, several such stations are bound to receive these signals if transmitted periodically throughout the day and night. Each direction-finding station determines the bearing of the transmitter. These bearings are sent to a control station which evaluates them and determines the approximate position of the transmitter.

1–15. Once this approximate position is known, mobile receiving stations, either aircraft or surface vessels, equipped with radio compasses, are dispatched to that location. Once there, they are within the range of the 500-kilocycle signals. The mobile stations can then proceed to home on these signals by the use of the radio compass, thus precisely locating the transmitter in distress.

1–16. The signals sent by automatic transmission from the transmitter are designed to be of maximum use in this method of location. The frequency shifts so that the signals needed by the fixed and mobile direction-finding stations are on the air alternately without attention from the operator. Transmission on each frequency begins with a series of SOS groups to attract attention, after which a long dash is transmitted to give the steady signal needed for an accurate bearing. The 500-kilocycle signals are tone-modulated so that they can be received on all types of receivers. The 8364-kilocycle signals are cw because a clearer indication on some types of remote direction-finding stations is obtained when no modulation is present.

1–17. EQUIPMENT SUPPLIED. (See Table I.)

1–18. EQUIPMENT REQUIRED BUT NOT SUPPLIED.

1–19. Radio Set AN/CRT-3 is complete and includes all equipment needed for use at sea.

1–20. If Radio Set AN/CRT-3 is to be dropped on land, it is necessary to fasten Pad MC-539 to the bottom of Bag BG-155-A, or to substitute any standard USAF 24-foot aerial delivery parachute for Parachute M-390-B.

1–21. A receiver capable of receiving an mcw signal on 500 kilocycles (or 1000 kilocycles) and a cw signal on 8364 kilocycles is required for bench tests and 100-hour inspection.

1–22. Besides the receiver described in paragraph 21, and the usual test equipment, the following items are required for a complete depot test.

a. 660 uuf ± 1% air or mica capacitor

b. 96 uuf ± 2% air or mica capacitor

c. 0-500-milliampere, r-f milliammeter

d. 0-150-milliampere, r-f milliammeter

e. 34-ohm ± 2% non-inductive 5-watt resistor

f. 219-ohm ± 2% non-inductive 5-watt resistor

1–23. DESCRIPTION OF MAJOR ASSEMBLIES.

1–24. RADIO TRANSMITTER T-74/CRT-3. (See figure 1–2.)

1–25. The complete radio transmitter, including the power supply and keying assembly, is self-contained in an aluminum cabinet that is airtight and waterproof. The cabinet is molded to the contour of the operator's legs. A belt is provided for securing the radio transmitter between the operator's legs.

1–26. The operating controls are located in an elongated oval depression in the front panel. The controls consist of a three-position selector switch and a push-button telegraph key. No other controls are provided.

1–27. In the upper left-hand corner of the panel is a jack for the plug in Signal Lamp M-308-B.

1–28. Reel RL-48 is fastened to the back of the door which opens in the lower half of the front panel. Antenna Assembly AS-207/CRT-3, which is described later in this section, is wound on this reel. A brake handle on the outside of the door controls the speed at which the antenna is unreeled.

1–29. A ground well at the lower left of the front panel contains a bobbin with 8 feet of ground wire wound on it. The end of the ground wire is attached to the ground cap. When not in use this cap closes the ground well.

1–30. A desiccator at the lower right of the front panel contains a bag filled with silica gel crystals. These crystals absorb moisture from the interior through openings in the wall of the compartment and dry the air within the transmitter.

1–31. The generator, automatic keying, and automatic frequency changing, are all operated by the turning of Hand Crank GC-18-A which screws into a socket in the top of the cabinet. When not in use, the crank fits into the crank well in the back of the cabinet where it is held by a special safety pin. The crank socket is covered by a cap when the crank is not in place.

TABLE I. EQUIPMENT REQUIRED

Quantity per Equipment	*Name of Unit*	*USAF Type Designation*	*Navy Type Designation*	*Overall Dimensions (inches)*	*Weight (pounds)*
1	Radio Transmitter, including:	T-74/CRT-3	T-74/CRT-3	10-1/2 x 10 x 9 (dimensions excluding belt and wrench)	16.0 (weight including belt and wrench)
	1 Hand Crank	GC-18-A		6 x 4-1/4 x 1	0.5
	1 Wrench			6-5/8 x 2-1/2 x 7/16	0.1
	1 Antenna Assembly wound on:	AS-207/CRT-3	AS-207/CRT-3	310 ft long	0.6
	1 Reel	RL-48		1-1/2 x 3 dia	0.1
1	Kite	M-357-A		19 x 4 dia	0.8
2	Balloon (in container)	M-278-A		5-1/8 x 4-1/4 dia	1.3 each
2	Generator (hydrogen), including:	M-315-B		11-5/8 x 4-1/4 dia (dimensions excluding inflating tube)	6.0 each (weight including inflating tube)
	2 Inflating Tubes			19 x 1-1/4 dia	0.5 each
1	Signal Lamp (in container)	M-308-B		3-1/8 x 3 dia	0.3
2	Antenna Assembly (wound on spare reel inside container)	AS-207/CRT-3	AS-207/CRT-3	2-1/2 x 3 dia	0.7
1	Bag including:	BG-155-A		20-1/4 x 17 x 14-1/2	8.1 (weight including pads and bag)
	1 Bag (for kite and inflating tubes)			23 x 5-1/4	0.1
	1 Pad			15 x 11 x 1/2	
	1 Pad			14-1/2 x 10 x 1/2	0.4
	2 Pads			7 x 4 x 2	0.3 each
	2 Pads			14 x 4 x 2	0.6 each
1	Parachute	M-390-B		16 x 9 x 4 (packed)	3.7
1	Handbook Maintenance Instructions			8-3/8 x 10-7/8	0.5
				Total Weight	40 pounds

Note: Radio Transmitter T-74/CRT-3 is supplied with one JAN-12SC7 vacuum tube, one JAN-12A6 vacuum tube, and one Crystal Unit CR-18/U installed in the proper sockets.

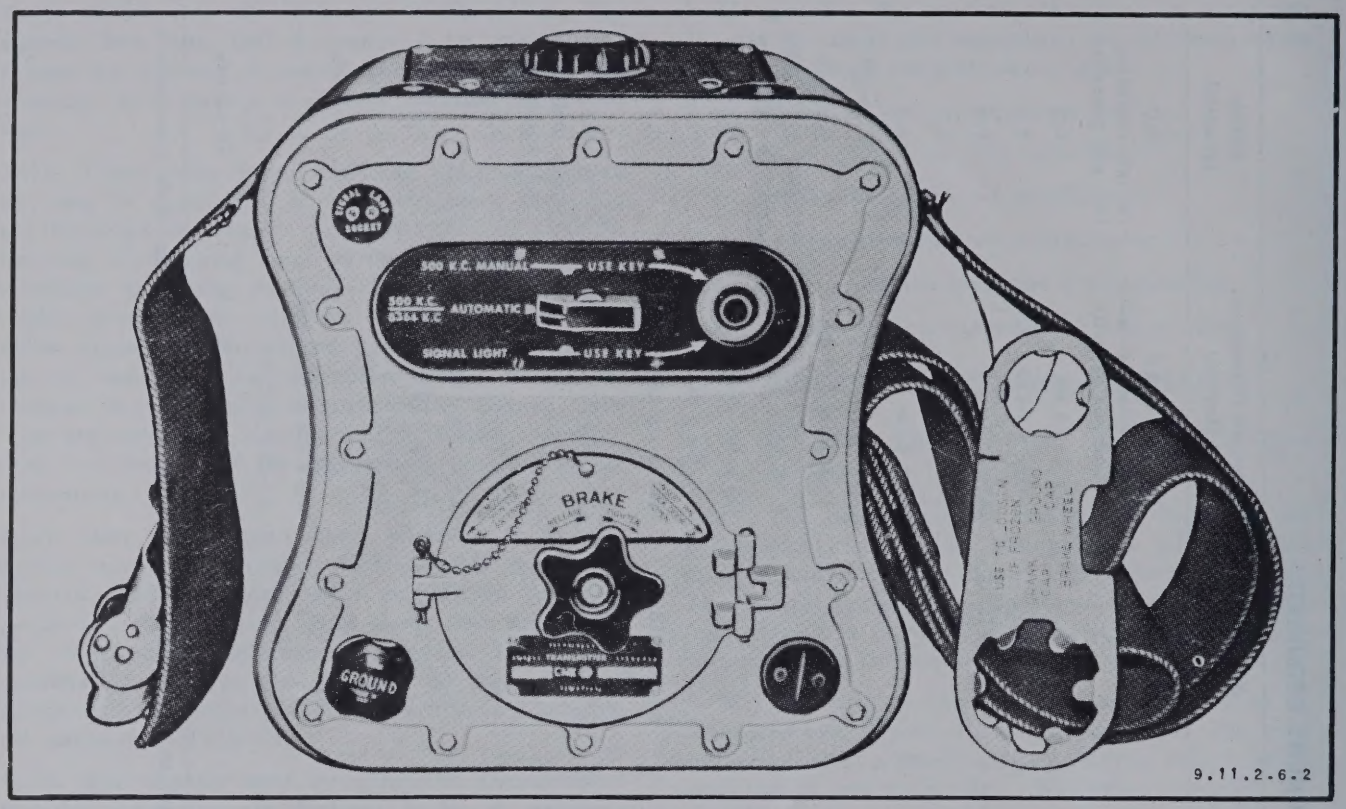


Figure 1–2. Radio Transmitter T-74/CRT-3–Front View

1–32. A wrench is attached to the belt for use in removing the crank socket cap and ground cap, and in turning the antenna brake handle.

1–33. Two indicator windows are provided at the top of the cabinet toward the front. One, marked SPEED INDICATOR KEEP LIGHTED, is lit when the crank is turned at the proper speed of 80 revolutions per minute, or faster. The other indicator window is marked RADIO OUTPUT and is lit when the transmitter is on the air, flickering with the keying.

1–34. Complete instructions for the use of the radio transmitter are given by extensive lettering on the top of the cabinet, along with markings on the control panel, door, ground cap, and antenna.

1–35. BALLOON M-278-A. The balloon (see figure 1–3) is used to raise the antenna when lack of wind does not permit the use of the kite. The balloon is supplied in a can, 5-1/8 inches long x 4-1/4 inches in diameter, which is opened by a key. When inflated by means of the hydrogen Generator M-315-B, the diameter of the balloon is over four feet.

1–36. KITE M-357-A. This collapsible box kite (see figure 1–4) measures 17 x 17 x 36 inches when assembled, and is used to raise the antenna when a wind is blowing. Complete instructions for its assembly and use are printed on the fabric of the kite. This kite will fly in wind velocities of from 7 to 40 miles per hour. The cloth of the kite has been made moisture-repellent. A section filled with kapok provides buoyancy; continued soaking, however, will eventually cause saturation and the kite will sink. The 36-inch longerons are divided in the middle and equipped with sleeve fittings; this permits the kite to be stowed in a space approximately 19 inches long x 4 inches diameter.

1–37. GENERATOR M-315-B. This hydrogen generator (see figure 1–5) is used to inflate the balloon. It consists of a large container opened at both ends by keys, and an inflating tube. Upon coming in contact with water, calcium hydride within the container generates hydrogen. The inflating tube serves as a handle to hold the container in the water and passes the hydrogen to the balloon. Instructions for the use of this hydrogen generator are printed on tags attached to the container and to the inflating tube.

1–38. SIGNAL LAMP M-308-B. The signal lamp (see figure 1–6) consists of a plug, a cord, a cylindrical bakelite lampholder with a lamp socket attached, a lamp, a domeshaped shield, and a strap to attach the lampholder to the top of the operator's head. A spare lamp is supplied in a clip next to the lamp socket. The signal lamp is omnidirectional.

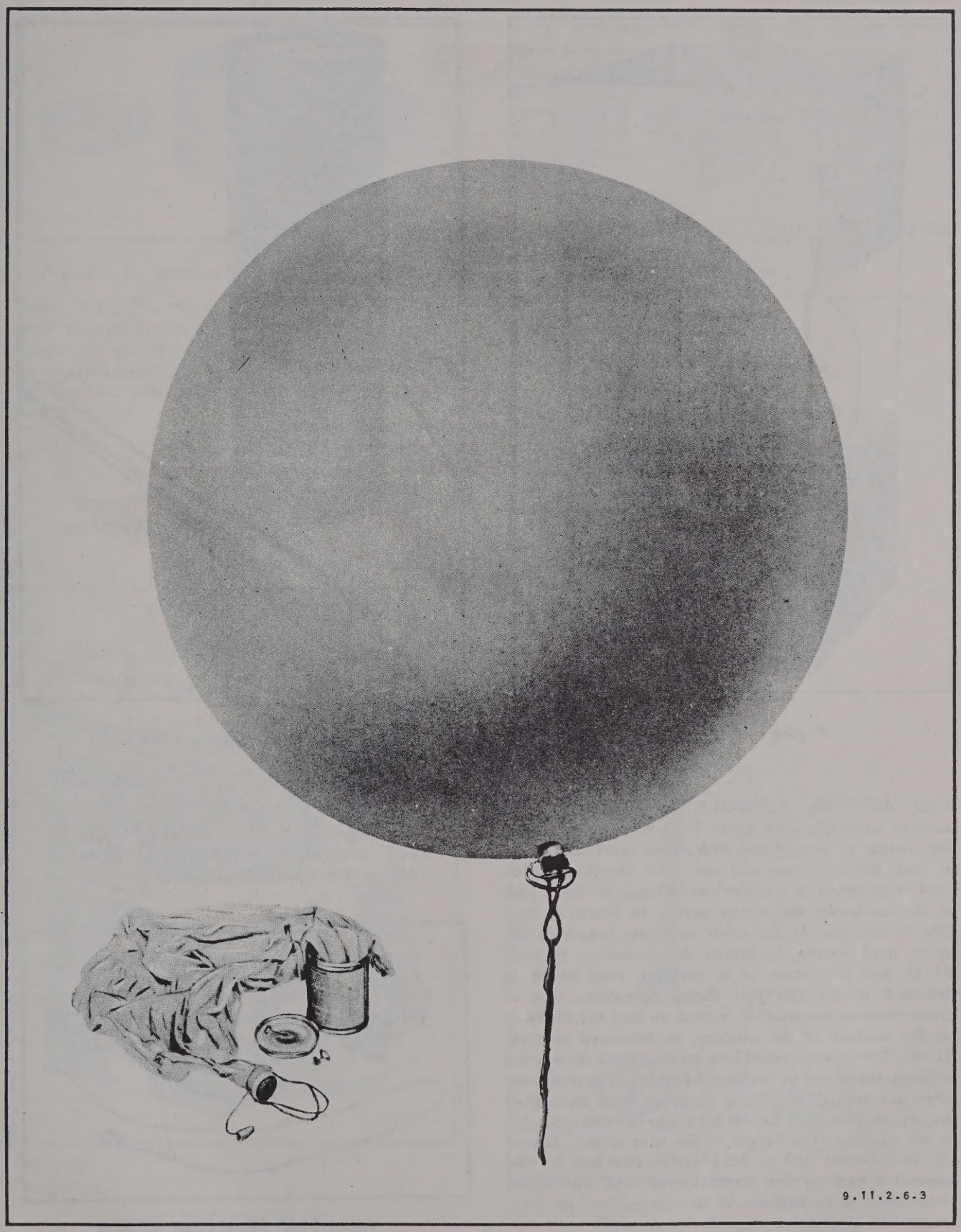


Figure 1–3. Balloon M-278-A

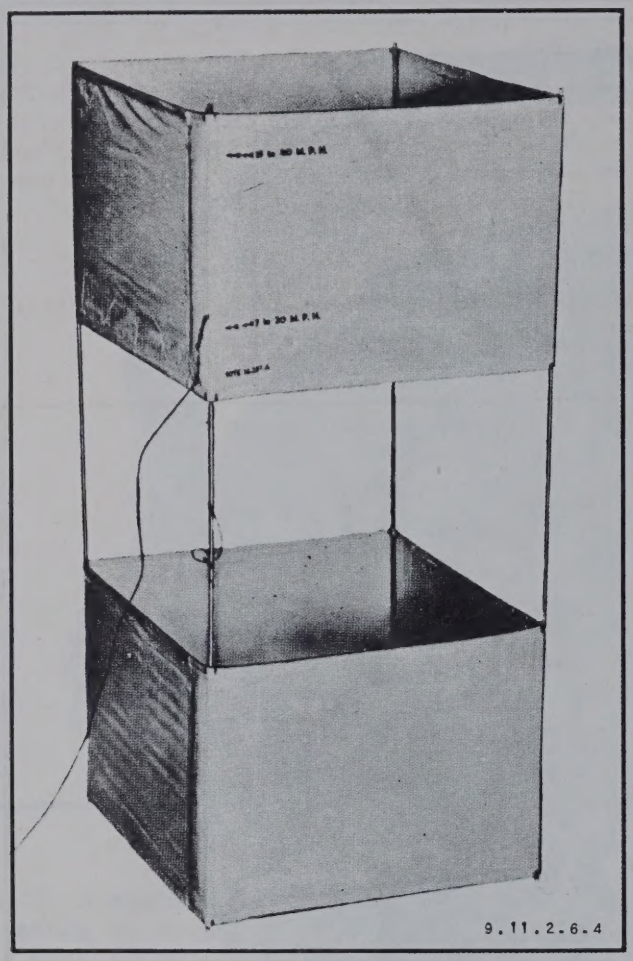


Figure 1–4. Kite M-357-A

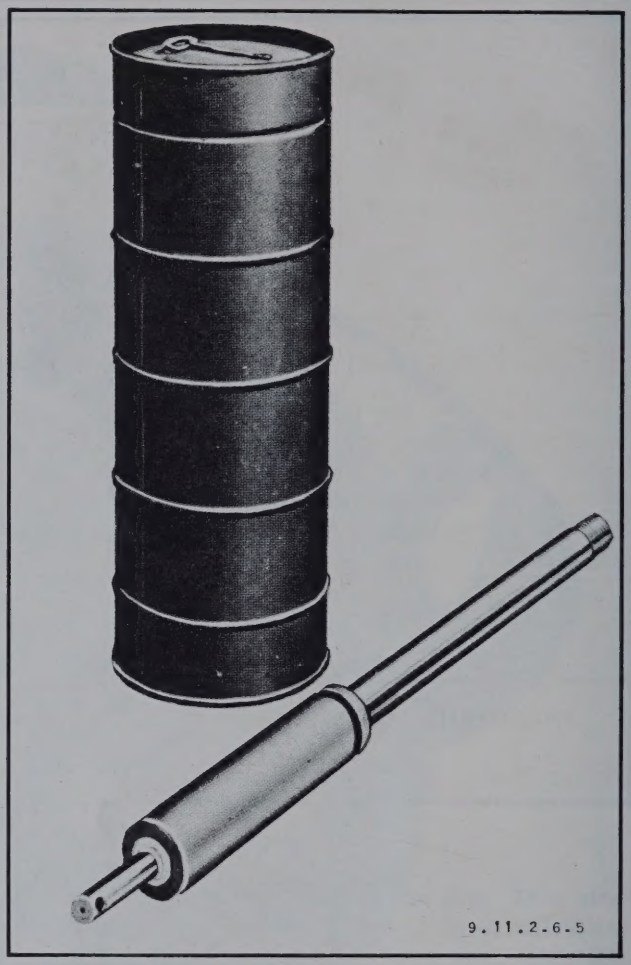


Figure 1–5. Generator M-315-B

1–39. ANTENNA ASSEMBLY AS-207/CRT-3. This antenna assembly (see figure 1–7) consists of a 306-foot length of wire, fitted with nylon insulating cords at both ends. At one end the short length of nylon cord is fastened to a swivel and clasp, which is part of the assembly and which serves to fasten it to a kite or balloon. At the other end, one length of the nylon cord serves to fasten the assembly to Reel RL-48 and the other is a securing cord which is fastened to the life raft during operation. One of these antenna assemblies, wound so that the clasp is on the outside of the winding, is furnished on Reel RL-48. Two spare assemblies are furnished on wooden bobbins, contained in cardboard cartons. These assemblies are wound in such a direction that when they are rewound on Reel RL-48 the clasp is on the outside of the winding. The length of the wire of this assembly is critical, and is held within one foot of the nominal length by the manufacturer. The transmitter is pretuned to an antenna of this length, and no other length will give maximum performance.

Note

Wire W-147 or W-148 is not interchangeable with Antenna Assembly AS-207/CRT-3, although it is similar in appearance.

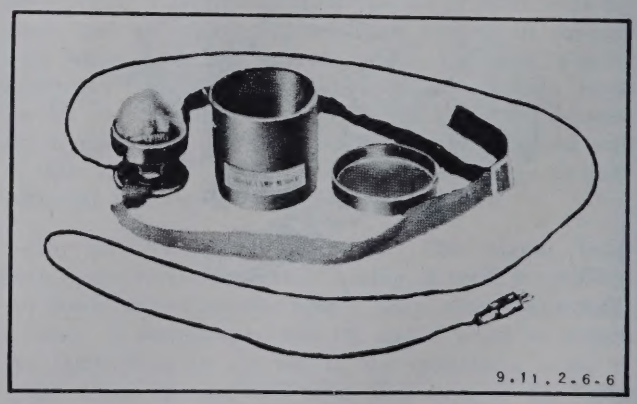


Figure 1–6. Signal Lamp M-308-B

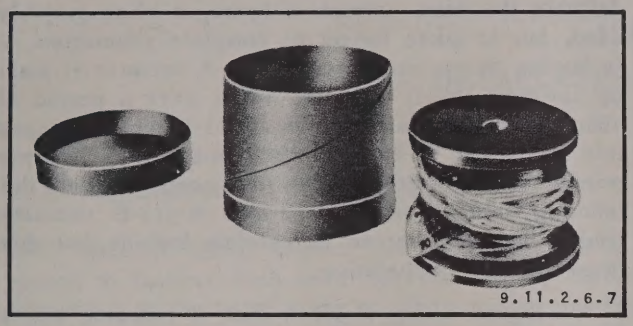


Figure 1–7. Antenna Assembly AS-207/CRT-3

1–40. BAG BG-155-A. The bag (see figure 1–8), when packed, holds all components of the radio set except the parachute. This is attached to the top of the bag. Various pads and a smaller bag, which holds the kite and inflating tubes, are supplied as part of Bag BG-155-A.

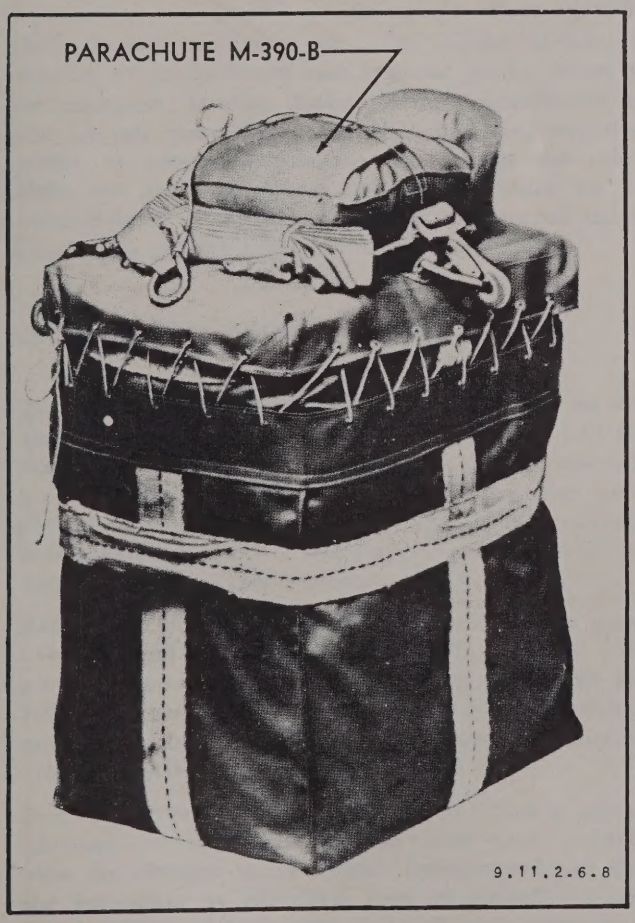


Figure 1–8. Bag BG-155-A

1–41. PARACHUTE M-390-B. This parachute (see figure 1–9) employs a 12-foot nylon canopy. It has two snap hooks which attach to mating V-rings on Bag BG-155-A. A static line is folded at one side of the parachute. One end of the static line has a snap hook by which it may be attached to the airplane, the other end is fastened to the rip cord.

1–42. INTERCHANGEABILITY OF MAJOR ASSEMBLIES.

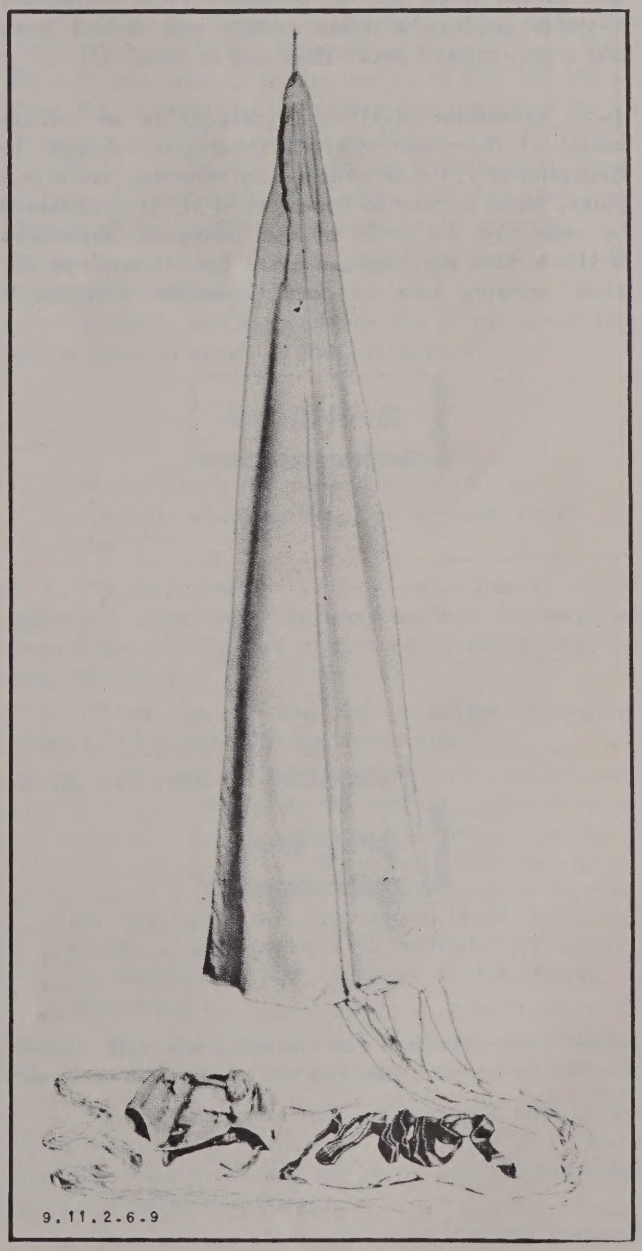


Figure 1–9. Parachute M-390-B

1–43. Some of the equipments which are part of Radio Set AN/CRT-3 bear nomenclature identical to that of corresponding items which are parts of Radio Sets SCR-578-A or SCR-578-B. Items which bear identical nomenclature are completely interchangeable.

1–44. In some instances equipments will bear the same type designation but different issue letters. The principal differences between such equipments which have been manufactured at the time of the issuance of this handbook are noted below.

1–45. Parachute M-390-A employs a rayon canopy and shroud lines and an untreated pack. Parachute M-390-B employs a nylon canopy and shroud lines and a tropicalized pack. Their use is identical.

1–46. Generator M-315-A (hydrogen) is an earlier model of Generator M-315-B (hydrogen). Access to Generator M-315-A is obtained by removing two screw plugs, while access to Generator M-315-B is obtained by removing the ends of the container. Generator M-315-A does not have an inner can. It employs the same inflating tube as does Generator M-315-B. It delivers the same amount of hydrogen when properly used, but it takes longer to complete generation. It is harder to use Generator M-315-A because it must be lowered slowly into the water over a period of about an hour, while Generator M-315-B can be plunged into the water at once. Instructions for its use are printed on tags attached to the container and the inflating tube. Earlier Generator M-315-B contains lithium hydride instead of calcium hydride but this in no way affects operation.

1–47. Signal Lamp M-308-A has a reflector and a flat lens in place of the dome of Signal Lamp M-308-B. Some of the earlier lamps did not have spare bulbs. Operation of both types is the same, but Signal Lamp M-308-A produces a beam of light in one direction while Signal Lamp M-308-B is omnidirectional.

1–48. TEMPERATURE CHARACTERISTICS.

1–49. Equipment should operate at ambient temperatures from −35° C to +60°C (−31° F to +140° F).

1–50. Storage temperatures may be between −65° C and +85° C (−85° F and +185° F) without permanent damage to the equipment.

SECTION II
INSTALLATION AND ADJUSTMENT

2–1. PRELIMINARY PROCEDURE.

2–2. BENCH TEST. Depots and sub-depots are directed to inspect each radio set immediately before issuing it to the using activity. The same inspection is to be made at the time the set is stowed and subsequently at the time of each regular 100-hour airplane inspection. These tests are identical with the 100-hour inspection described in section V, paragraph 5–2.

2–3. REPACKING. Figure 8–3 must be followed when repacking in order to avoid difficulty and possible damage to the equipment.

2–4. INSTALLATION IN AIRPLANE.

2–5. Locate the radio set in an aircraft in such a manner as to facilitate fast removal in the event of an emergency landing. Make a definite installation in the aircraft, providing brackets, hooks, and securing cords as required. Mounting dimensions and other data are given in figure 8–1. If the radio set is carried loose in the aircraft it may be damaged and it may not be readily available in an emergency.

2–6. REMOVAL FROM AIRPLANE.

2–7. If the airplane is ditched (crash-landed on water), throw the radio set out of the airplane into the water at the same time that the life raft is removed. Do not worry about its getting wet. It will float until picked up. Make sure, however, that it is recovered before paddling away. Obviously, the parachute is not used under these circumstances.

2–8. Only when the airplane is abandoned by parachute should the radio transmitter be dropped from aloft by parachute. Release it at the same time the life rafts are dropped. Complete the abandonment quickly so that the crew and equipment will land as closely together as possible.

2–9. If the radio set is to be dropped from a rescue airplane, to aid survivors who have been sighted, slow the airplane to its slowest flying speed and drop the equipment by parachute from an altitude of from 300 to 500 feet. If the speed is too great, damage or loss of the equipment may result. If the altitude at the time of release is too great, the radio set may drift too far while descending.

CAUTION

The parachute is designed to protect the equipment when it is dropped on water only. Damage to the equipment is likely if it is dropped on land.

2–10. If it is known in advance that Radio Set AN/CRT-3 will be dropped on land, obtain Pad MC-539 and strap it to the bottom of Bag BG-155-A. (See the instructions accompanying the pad.) As an alternate method, a standard 24-foot aerial delivery parachute can be substituted for Parachute M-390-B. Either of these additional items increases the total weight of the equipment required in the aircraft.

2–11. In dropping the equipment by parachute, observe the following steps:

a. Securely fasten the loose end of the static line to the metal structure of the airplane.

WARNING

Do not attach the static line to any part of your body when throwing out the radio equipment.

b. Be sure that the 12-foot static line is in the clear and cannot foul. Be sure that both the snaps on Parachute M-390-B are connected to the V-rings on Bag BG-155-A.

c. Throw out the bag and parachute. The parachute will be opened by the static line.

2–12. SETTING UP EQUIPMENT.

WARNING

Do not raise the antenna or leave it up during a thunderstorm. If lightning strikes the antenna, it may result in severe injury to personnel.

2–13. After the radio set has been recovered remove the transmitter from the bag and proceed as follows:

a. Remove the cotter pin and open the door on the front panel of the transmitter. (See figure 2–1.) Keep the door open by sliding the cotter pin into the holes provided on the door hinges.

b. Take enough slack wire from the reel fastened to the back of this door to reach the kite or the balloon.

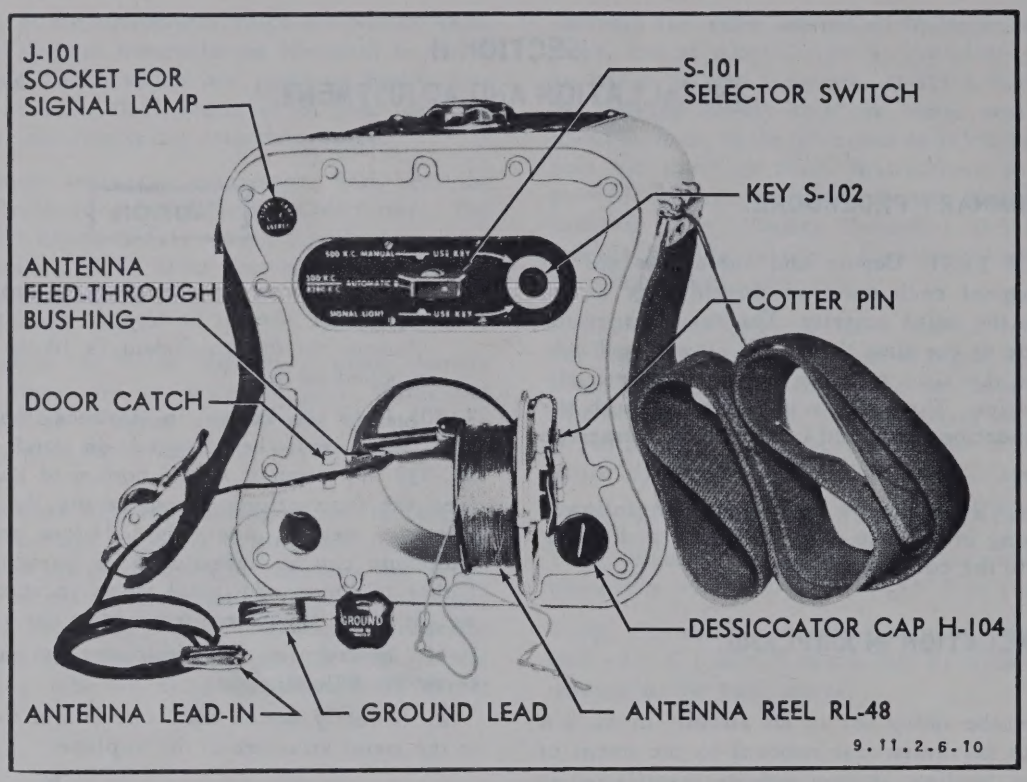


Figure 2–1. Radio Transmitter T-74/CRT-3–Front View

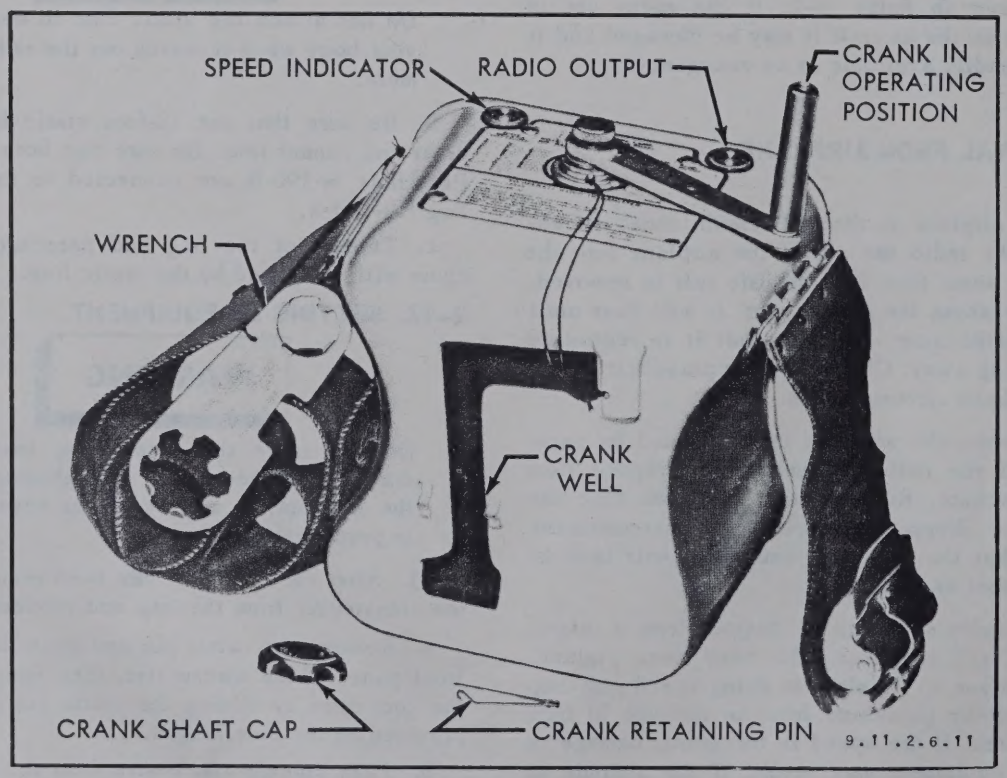


Figure 2–2. Radio Transmitter T-74/CRT-3 – Rear View

c. Rotate the BRAKE knob clockwise to maintain a slight tension on the reel. Use the wrench attached to the belt to loosen the brake if it cannot be turned by hand. (See figure 2–2.)

d. Unscrew the cap marked GROUND and remove the groundwire reel. (See figure 2–1.) If necessary, use the wrench attached to the transmitter to loosen the cap.

e. Unwind the wire and play it out into the water, using the cap as a weight to keep it submerged. When replacing the cap, hand force alone is sufficient. Never use a wrench.

Note

Although Radio Set AN/CRT-3 is designed and tuned to operate with Antenna Assembly AS-207/CRT-3, supported over the water and with the ground wire submerged, it may also be used from land. When possible, operate the equipment from a boat or life raft some distance off shore. If this is impossible, locate a body of water and operate on its edge with a counterpoise extending away from the edge of the water and with the ground wire submerged. If there is no nearby body of water the equipment can be operated over land. Roll out one or both of the spare antenna assemblies along the ground to act as a counterpoise. Connect them to the ground wire and if the ground is moist, bury the ground wire.

f. Set the radio transmitter in the bottom of the boat or life raft so that it will be ready to be secured to the operator later by means of the straps provided at the sides of the unit.

2–14. TO RAISE ANTENNA USING KITE M-357-A.

2–15. Kite M-357-A is packed in an inner bag within Bag BG-155-A together with the inflating tubes for Generator M-315-B. It can be assembled as described below.

a. Untie the tie tapes and remove the kite. Do not lose the inflating tubes.

b. Put together the two halves into which the kite is divided by fitting the ends of the four longerons on one half into their respective sockets on the other half. (See figure 2–3.) Start by fitting together the longerons which are fastened together by a short length of cord, and then fit together the other corresponding longerons one by one around the kite. Be sure that each pair of longerons is pressed tightly together so that the two halves are held firmly in position.

c. Holding the kite with one hand, reach with the other hand into its center and partially unfurl the kite.

d. Place one hand on one spider and push toward the end of the kite. Turn the kite and push with the hand on the spider at the opposite end. (See figures 2–4 and 2–5 for method of holding longerons and pushing the spiders into place.) When these have

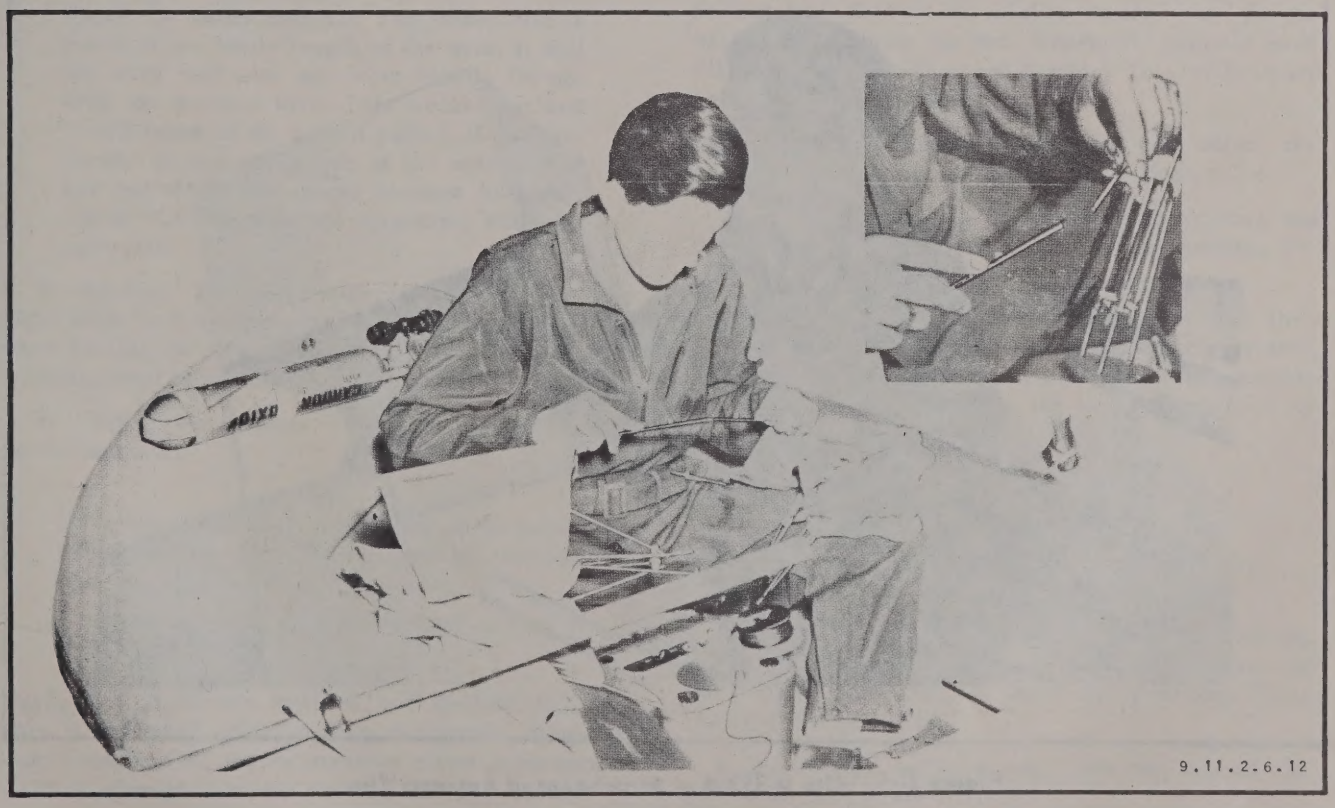


Figure 2–3. Kite M-357-A–Assembly, Step 1

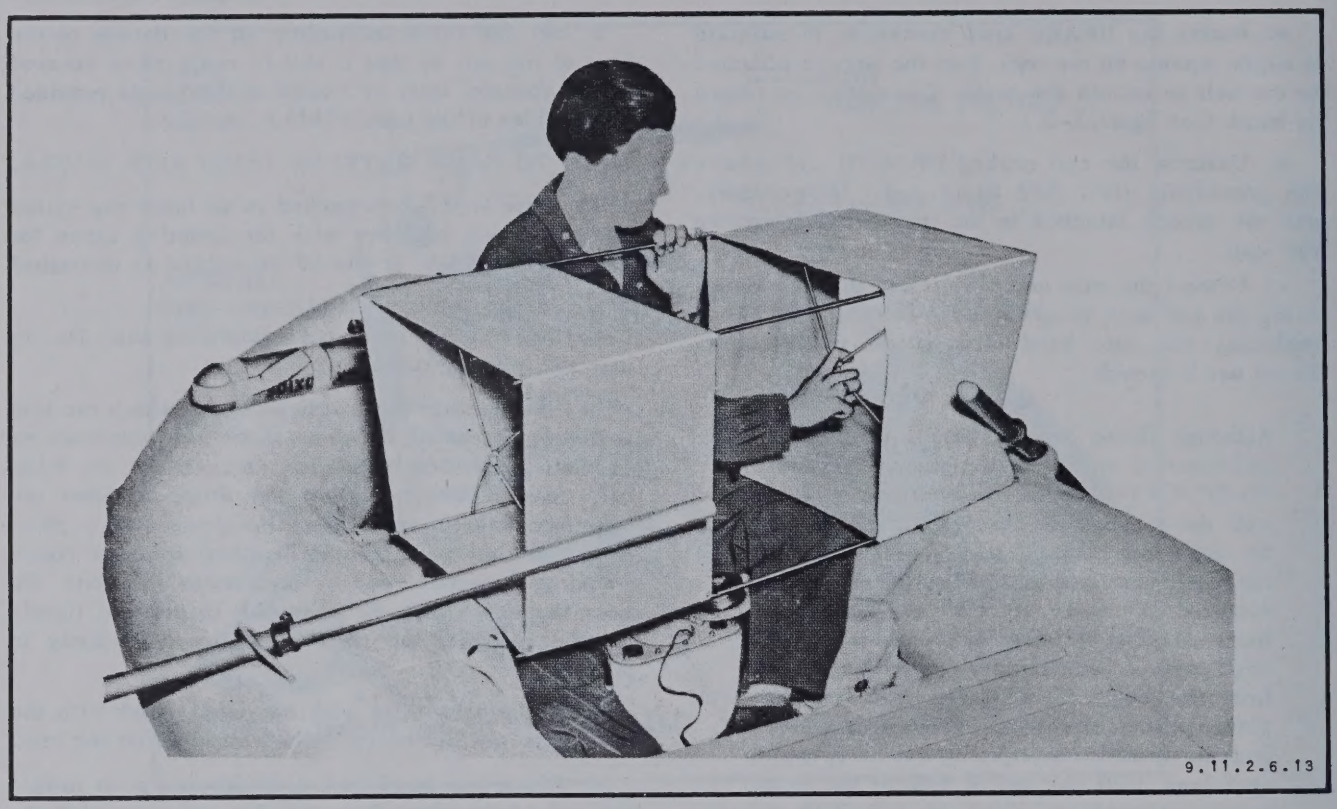


Figure 2–4. Kite M-357-A – Assembly, Step 2

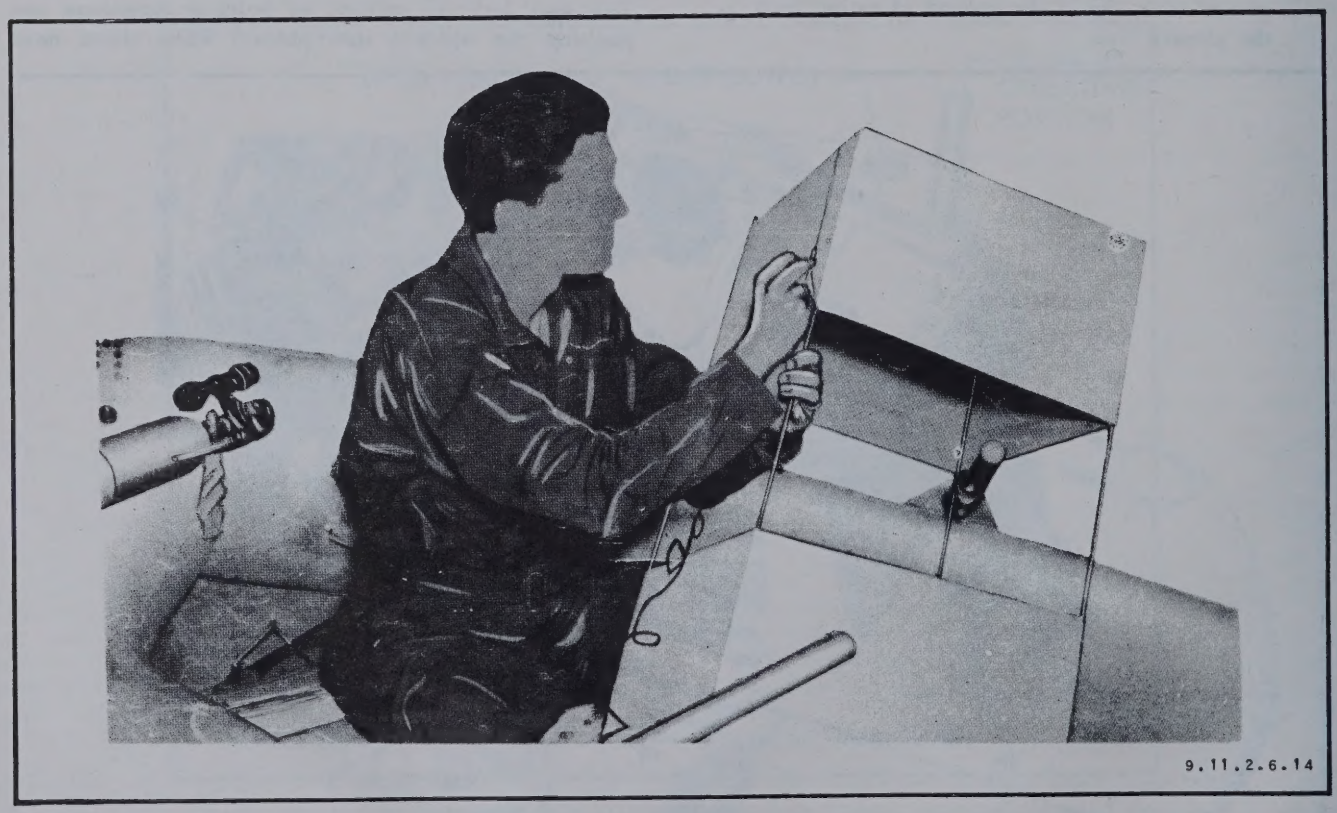


Figure 2–5. Kite M-357-A – Attachment of Antenna Wire

been sufficiently extended, they will lock into position. Stop pushing on the spiders just as soon as you feel them jump. The process may be thought of as similar to that of opening an umbrella.

Note

To dismantle the kite when it is no longer in use, push in on the spiders, allowing it to collapse. Then separate the pairs of longerons one by one.

e. After assembling the kite, estimate the wind velocity.

f. There are two eyelets on the kite, one at a corner marked 15 to 40 M.P.H. and another farther in near a marking 7 to 20 M.P.H. (See figure 2–5.) Attach the antenna-wire clasp to whichever of these two eyelets more nearly corresponds to the estimated wind velocity. If in doubt, use the eyelet indicated for low wind velocity.

g. Exercising due caution, rise up as far as possible in the boat. Toss the kite into the air to clear the turbulent area to leeward of the operator. The kite will be found a ready flyer in winds as low as 7 miles per hour, provided only that the wind is blowing steadily. Always maintain a steady tension at the BRAKE sufficiently strong to prevent the kite from dropping into the water. On occasions it will be found more practicable to pay out the wire by hand. Pay out all of the 306 feet of antenna wire on the reel.

Note

Raise the entire antenna. The transmitter is tuned to the whole length of the wire. It will not work well into any other length. Do not kink the antenna wire. This weakens it and it will break at the kink if pulled. If the wire breaks do not use a part of the antenna but use one of the two spares Antenna Assembly AS-207/CRT-3 that are furnished with the radio set.

h. Release the antenna-securing cord from the insulating cord by removing the three small pieces of tape holding the two together and attach the antenna-securing cord to the life raft. (See figure 2–6.)

i. Connect the antenna lead-in from the transmitter to the antenna.

Note

Never permit the antenna to drag in the water while transmitting. Try to keep the antenna wire as high in the air as possible.

2–16. TO RAISE ANTENNA USING BALLOON M-278-A.

2–17. Use Generator M-315-B and Balloon M-278-A only if the wind velocity does not permit using the kite. Complete all the instructions given in paragraph 2–13.,a. through f.,before starting this operation.

a. Remove one of the sealed balloon cans in Bag BG-155-A.

b. Open the can with the key provided and carefully remove the balloon. Care must be exercised to avoid breaking the metal tab while unwinding the sealing strip.

CAUTION

Handle the balloon very carefully and exercise extreme caution to prevent abrasions or punctures in the process of inflation.

c. If the balloon is stiff from cold, do not try to bend any part of it. It must be thawed before use. This can be done in either one of two ways:

1. Hold the balloon in water. Unfold it gently as the outer layers thaw. This will require between one and two minutes.

Note

The balloon stiffens only with the extreme cold of high altitude (at about −25°C or −13°F) and hence can be thawed in near-freezing water, (about 0°C or 32°F). However, this method should not be used when the air temperature is below freezing, since ice will form on the balloon.

2. Put the balloon under an arm between the inner and outer clothing. After the outer layers of the balloon have thawed, unfold them carefully and put the balloon back under the arm. Repeat the process until all parts of the balloon are flexible. This will require between 15 to 30 minutes.

d. When the balloon is ready to use, attach the antenna to the loops provided at the balloon valve.

e. Remove one of the two hydrogen generators and one of the inflating tubes. Use care in handling the inflating tube. It will not float.

f. Remove the top end of the generator first, then the bottom end, using the keys attached to the generator. While turning the key, observe the strip to make certain that it tears straight. Keep the key perpendicular to the end of the generator.

CAUTION

Exercise care while unwinding the sealing strip to avoid breaking the metal tab.

g. Allow the inner can to drop down from the bottom of the generator. (See figure 2–7.) Then pull the can out a little farther until it locks into position. Twist it slightly if necessary.

h. Screw the inflating tube into the top of the generator. (See figure 2–7.)

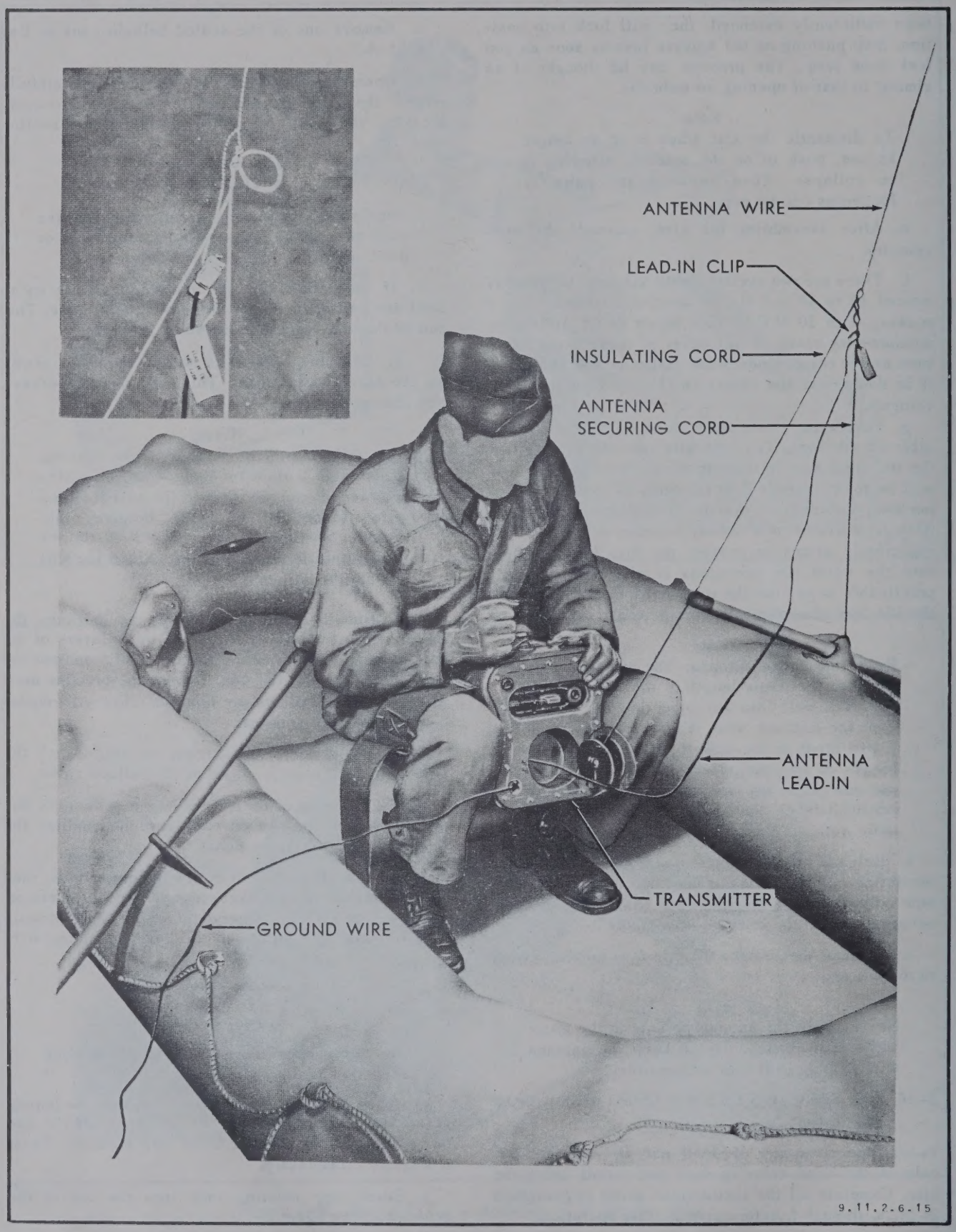


Figure 2–6. Antenna Connection

i. Wet the tip of the inflating tube and the balloon neck so the two will slide together more easily.

j. Hold the neck of the balloon. Force the tip of the inflating tube into the neck of the balloon as far as it will go, that is, until the insulated part touches the bottom of the balloon neck. Twist the inflating tube back and forth slightly while pushing on it, to make it go into the balloon valve more easily. Do not twist more than one-half turn in either direction, or the valve may become blocked.

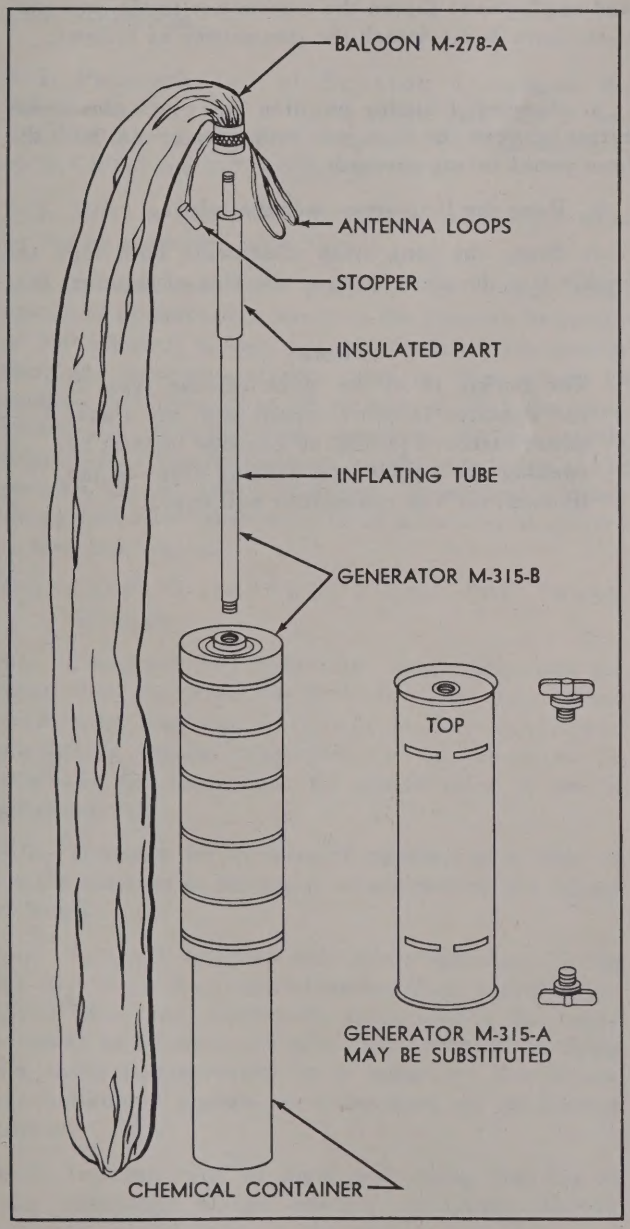


Figure 2–7. Balloon M-278-A – Inflation Setup

Note

The inflating tube must be pushed all the way in in order to open the valve in the balloon neck. If this is not done, the gas will bubble out of the bottom of the generator. If generator M-315-A is to be used, read paragraph 1–46. before proceeding further.

k. Hold the balloon up to prevent crimping its neck, then immerse the generator into the water until it is completely submerged. Keep the top of the can level with the surface of the water. The generator will vibrate slightly and hydrogen will be generated.

WARNING

Hydrogen gas is explosive even when in the balloon. Do not smoke or permit sparks in its vicinity. Do not touch the generator while it is in use, since it generates large amounts of heat. Hold the inflating tube by the insulated part at the top.

l. If gas bubbles out from the bottom of the generator, try pushing the inflating tube farther into the neck of the balloon. Check to make sure that the top of the generator is not out of the water.

m. Inflate the balloon until the generation of gas stops. Do not stop the inflation procedure until all vibration from the generator has ceased for several minutes. For adequate lift and maximum time aloft, use all the hydrogen. The entire inflating operation will take about 45 minutes.

n. If excessive liquid has been deposited in the balloon during inflation, hold the generator out of the water and permit the liquid to drain out of the balloon through the inflating tube. Do not permit an excessive amount of hydrogen to escape.

Note

The minimum amount of water needed to generate the gas to fill the balloon completely is approximately 50 gallons.

o. Remove the balloon from the inflating tube.

p. Wet the stopper and insert it firmly into the neck of the balloon.

q. Unscrew the inflating tube and retain it as a spare in event the other inflating tube should become lost.

WARNING

Throw away the generator to avoid possible damage to clothes, equipment, or the body from the caustic residue. Immediately wash off with water any caustic residue which comes in contact with the eyes, skin, or clothing.

r. With the antenna fastened to the balloon, release the BRAKE and allow the balloon to pull out all the wire on the reel.

s. Attach the antenna-securing cord to the life raft and connect the antenna lead-in from the transmitter to the antenna. (See figure 2–6.)

2–18. If a wind rises while using the balloon, it may be desirable to employ the kite In general, the change from balloon to kite should be made when the wind rises above 20 miles per hour. The balloon can be made captive to the raft by using the lacing cord of Bag BG-155-A. Prevent the captive balloon from striking objects that might cause it to burst and from interfering with the antenna.

2–19. If the original antenna wire should become lost or broken, it may be replaced by a spare Antenna Assembly AS-207/CRT-3. Two spares are provided. The wire on the spare rolls is wound on backwards so that it may be reeled directly on Reel RL-48.

2–20. PROCEDURE FOR SETTING UP TRANSMITTER T-74/CRT-3.

2–21. To set up Transmitter T-74/CRT-3, proceed in the following manner:

a. Remove the cap located at the top center of the transmitter, making the crank socket available. If necessary, use the wrench attached to the transmitter to loosen the cap. (See figure 2–2.) Save the cap, it should be replaced if the crank is removed.

Note

In replacing the cap, hand force alone is sufficient. Never use the wrench.

b. Pull out the locking pin and remove Hand Crank GC-18-A from the well on the back of the transmitter. Leave the leash attached to the hand crank.

c. Insert the hand crank into its socket and tighten the thumb screw.

2–22. Operating the transmitter requires a comparatively high turning torque. To assure stability, a belt assembly is attached to the case of the transmitter and employed to fasten the transmitter to the operator. (See figure 2–2.) Attach the transmitter as follows:

a. Assume a sitting position and place the transmitter between the legs just above the knees, with the front panel facing outward.

b. Pass the long strap over the left leg.

c. Bring the long strap underneath both legs and buckle it to the short strap at the side of the right leg.

Note

The buckle is of the quick release type. If the operator falls overboard with the transmitter fastened to him, he can free himself by opening the buckle and kicking clear of the transmitter. The transmitter will float.

SECTION III
OPERATION

Note

It is a violation of international law to transmit on 500 and 8364 kilocycles except in an emergency. For testing purposes, this equipment must be operated into the specified dummy load instead of the antenna.

3–1. GENERAL.

3–2. Paragraph 1–3 of Section I explains the differences between Radio Sets AN/CRT-3 and AN/CRT-3A and their respective transmitters, T-74/CRT-3 and T-74A/CRT-3.

3–3. Prior to operation, Radio Set AN/CRT-3 must be set up according to Section II.

3–4. International law provides for ships' radio operators to maintain a watch on the distress frequency of 500 kilocycles, during 3 minutes after the quarter hour and three-quarter hour; that is, from 15 to 18 minutes and from 45 to 48 minutes after the hour. Probability of interception, therefore, will be greatly increased if transmission is conducted during these periods. Operate the transmitter for several minutes during and after these periods to allow rescue parties to take bearings.

3–5. GENERAL INSTRUCTIONS FOR TRANSMISSION.

3–6. Paragraph 3–4 tells when ships' operators are most likely to be on watch. Most shore stations and even some ship and aircraft stations maintain continuous watch. Therefore, if no timepiece is available the exact time for transmission is not of great concern.

3–7. Transmit for at least 5 minutes at a time to enable stations to determine bearings after the signal is heard.

3–8. Transmit at least once every half hour during the day. Many short transmissions, close together, are better than one continuous transmission for hours followed by a long period of silence. An airplane using the radio transmissions as a guide for the rescue needs frequent signals so it can keep on the correct course.

3–9. Transmit both at night and during the day to take advantage of the changes in range. Always transmit several times in the periods near dawn and near dusk.

3–10. Radio stations engaged in the rescue operation may be far from the life raft and from each other. They must communicate with each other and with rescue agencies close by before the rescue can be accomplished. The operator, therefore, must not use all of his strength the first day.

3–11. Transmit continuously if a ship or airplane is heard or sighted. At night, use both radio transmission and the signal lamp as circumstances warrant.

3–12. Share the work of cranking. Interchange hands to ease the effort. If possible, let others crank the transmitter while one man holds it between his legs.

3–13. AUTOMATIC RADIO TRANSMISSION.

3–14. STARTING RADIO TRANSMITTER T-74/CRT-3.

a. Set the selector switch pointer to 500-8364 K.C. AUTOMATIC. (See figure 2–1.)

b. To start transmission rotate the crank (see figure 2–2) in a clockwise direction at approximately 80 to 100 revolutions per minute. When sufficient speed has been attained the window marked SPEED INDICATOR KEEP LIGHTED (see figure 2–2) located on the top of the transmitter will light. Faster crank speeds are ineffective since the transmitter contains automatic voltage regulation, and undesirable since they will speed up the transmitter code characters.

c. Continue cranking. Allow at least 20 seconds for the filaments of the vacuum tubes to heat, after which time the RADIO OUTPUT light should flash on and off with the keying of the transmitted signal. There are no further adjustments.

3–15. In the 500-8364 K.C. AUTOMATIC selector switch position, the transmitter automatically sends a signal consisting of six groups of SOS followed by a sustained dash of about 20 seconds duration. This occurs first on 500 kilocycles and then on 8364 kilocycles, automatically switching from one frequency to the other about every 40 or 50 seconds.

3–16. STOPPING RADIO TRANSMITTER T-74/CRT-3. To stop transmission, stop cranking.

3–17. MANUAL RADIO TRANSMISSION.

3–18. GENERAL INSTRUCTIONS FOR MANUAL TRANSMISSION.

a. Send slowly, about five words per minute at most. It is difficult to send readable code with this transmitter.

b. Monitor the transmission by reading the RADIO OUTPUT light as a blinker.

c. At intervals transmit a sustained dash to enable planes which may be homing on the transmission to get a bearing.

d. Use manual keying only when you have a particular message to send.

e. Never use manual keying alone; switch to 500-8364 K.C. AUTOMATIC for five minute intervals occasionally. Transmission on 8364 kilocycles, available on automatic keying only, gives the greatest range.

3–19. STARTING RADIO TRANSMITTER T-74/CRT-3.

a. Set the selector switch pointer to the 500 K.C. MANUAL position. (See figure 2–1.)

b. To start transmission rotate the crank (see figure 2–2) in a clockwise direction at approximately 80 to 100 revolutions per minute. When sufficient speed has been attained, the window marked SPEED INDICATOR KEEP LIGHTED (see figure 2–2) located on the top of the transmitter will light. Faster crank speeds are ineffective, since the transmitter contains automatic voltage regulation. Continue cranking for about 20 seconds to allow the filaments to heat.

c. To transmit a signal, the push button marked KEY must be pressed. This button is manipulated most conveniently by the operator with one of the first two fingers of the left hand. If another person is present, he might telegraph with his right hand while the other cranks. The indicator lamp marked RADIO OUTPUT (see figure 2–2) should light when the KEY is depressed. This light provides a means for visually monitoring the message transmitted. The International Morse code is printed on the top of the transmitter.

3–20. STOPPING RADIO TRANSMITTER T-74/CRT-3.

a. To stop transmission for a few moments only, release the KEY button; continue cranking.

b. To stop operation completely, merely stop cranking.

3–21. OPERATION OF SIGNAL LAMP.

(See figure 1–6.)

3–22. Signal Lamp M-308-B may be used for visual signaling at night if an aircraft is heard. This does not require the antenna. To use this lamp, proceed as follows:

a. Obtain the signal lamp from the accessory bag. Plug the cord attached to the signal lamp into the SIGNAL LAMP SOCKET at the upper left corner of the transmitter panel.

b. Strap the transmitter between the legs.

c. Set the selector-switch knob at the SIGNAL LIGHT position.

d. Strap the signal lamp on top of the head with the straps under the chin. The lamp is nondirectional, and its light may be seen from any direction.

e. Depress the push-button KEY.

f. Crank the transmitter at a speed where maximum brilliancy of the signal light is obtained.

Note

If the lamp bulb does not light or if it burns out during use, unscrew the dome of the signal lamp, replace the bulb with the spare bulb supplied in the spare clip next to the socket, and then replace the dome.

g. To telegraph with the signal light, manipulate the push-button key.

Note

No radio transmission occurs when the signal lamp is used. When changing from signal lamp operation to radio transmission, allow time for the tubes to heat. The tubes are not in the circuit when the signal lamp is used.

SECTION IV
THEORY OF OPERATION

4–1. GENERAL.

4–2. Paragraph 1–3 of Section I explains the differences between Radio Sets AN/CRT-3 and AN/CRT-3A and their respective transmitters, T-74/CRT-3 and T-74A/CRT-3.

4–3. Radio Set AN/CRT-3 is a simple, rugged, emergency, dual-frequency radio transmitting system designed for use from a rubber life raft. No receiving equipment is supplied. The set provides fully automatic transmission of distress signals so that any operator, no matter how untrained, can send distress signals which, when received by rescue parties, will permit bearings to be taken. The set operates, when switched to the 500-8364 K.C. AUTOMATIC position, on the international distress frequency of 500 kilocycles with 1000-cycle tone modulation, transmitting six groups of SOS followed by a sustained dash of approximately 20 seconds length, after which an internal arrangement automatically shifts the frequency to 8364 kilocycles and six groups of SOS are again transmitted followed by a sustained dash of approximately 20 seconds duration. This sequence is repeated over and over with continued cranking. The 8364-kilocycle frequency is unmodulated and crystal controlled. The long dashes provide a sustained signal necessary for accurate bearings to be taken. A light visible through a window is provided for cranking speed indication, and another light visible through another window is used for r-f indication. All power requirements are supplied by hand cranking.

4–4. The radio set may be used as a hand-powered signal light with manual keying. Signal Lamp M-308-B is provided with a 5-foot cord and plugs into the radio transmitter which provides all necessary power for operation. If the signal light is employed, no radio transmission takes place. A spare lamp is supplied in a clip under the dome of the signal lamp.

4–5. The radio set may be manually keyed on 500 kilocycles only.

4–6. All electrical power for operating either the radio transmitter or the signal light is furnished by the hand-powered generator in the transmitter case.

4–7. Two tubes are used in the radio transmitter: type JAN-12SC7 as an audio oscillator and amplifier, and type JAN-12A6 as an r-f oscillator. While the radio transmitter is operating on 8364 kilocycles, only JAN-12A6 is employed.

4–8. OVER-ALL OPERATION.
(See figure 4–1.)

4–9. The hand crank operates two gear units; one of which furnishes a step-up ratio to drive the generator, while the other furnishes two step-down ratios to drive a frequency-changing cam and a code cam.

4–10. An audio oscillator stage generates a 1000-cycle tone. This tone is amplified in an audio amplifier stage and fed to the r-f oscillator stage. However, during 8364-kilocycle operation, B+ is removed by a frequency selecting relay from both audio stages and they do not function. The coil circuit of the frequency selecting relay will be discussed later.

4–11. An r-f oscillator stage operates at either 500 kilocycles or 8364 kilocycles as determined by other frequency-selecting relay contacts. These contacts switch either a 500-kilocycle tuning network or an 8364-kilocycle crystal into the circuit. Two more sets of frequency-selecting relay contacts connect both the input and output of either 500-kilocycle or 8364-kilocycle tank between the r-f oscillator plate and the antenna.

4–12. A selector knob operates a complicated wafer switch which, for purposes of clarification, has been shown as several individual switches on the diagram.

4–13. In the 500-8364 K.C. AUTOMATIC position, the cathode circuit of the r-f oscillator is placed in series with the code cam to provide automatic keying, the tube filaments are connected, and the frequency-selecting relays are placed in series with the frequency-changing cam to provide the automatic change from 500 to 8364 kilocycles and back again.

4–14. In the 500 K.C. MANUAL position, the cathode circuit of the r-f oscillator is placed in series with the manual key, and the tube filaments are connected. No connection is made to the coils of the frequency-changing relays.

4–15. In the SIGNAL LIGHT position, the signal lamp is placed in series with the manual key and the 28-volt power supply. The tube filaments are not connected.

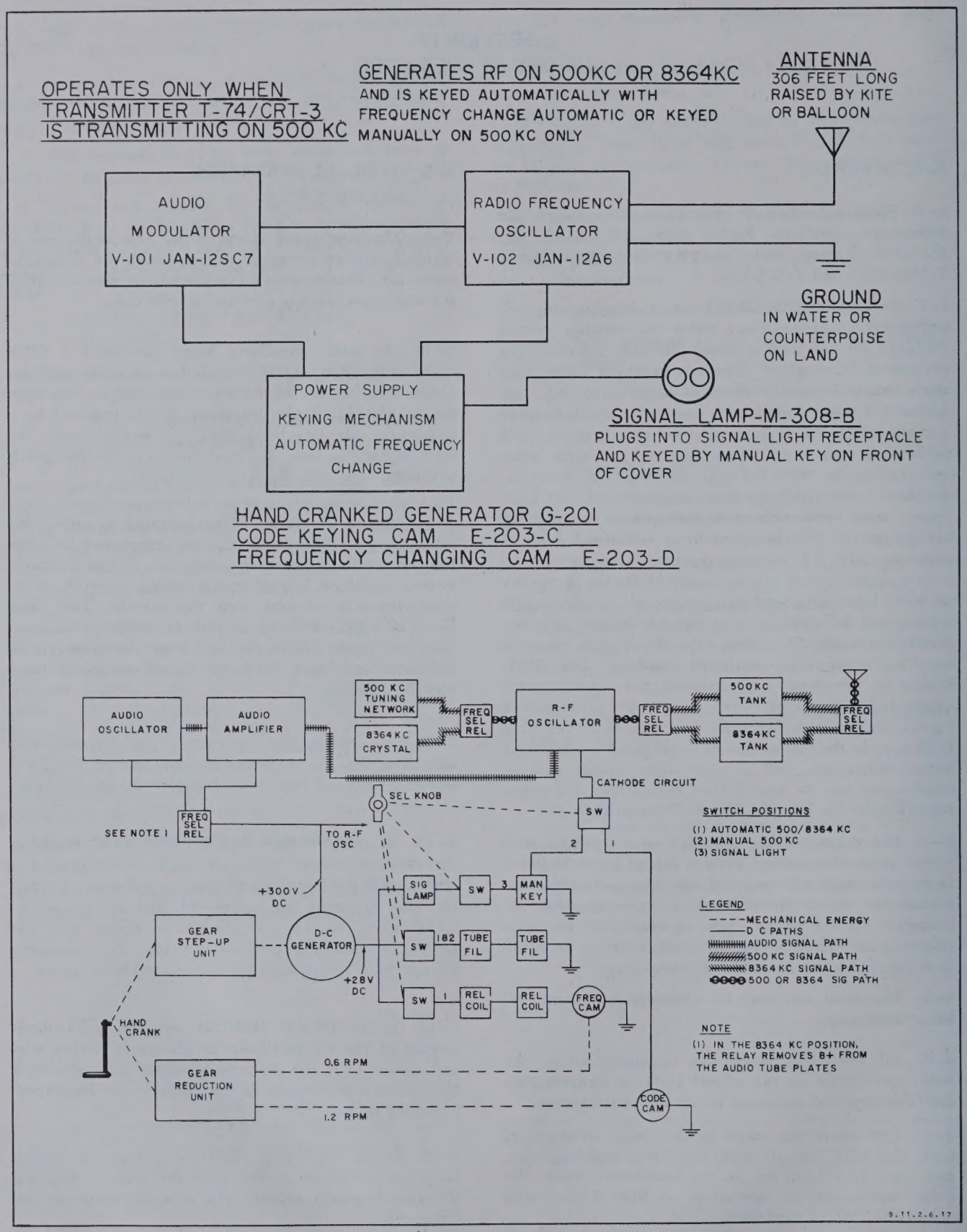


Figure 4–1. Radio Transmitter T-74/CRT-3 – Block Diagram

4–16. DETAILED FUNCTIONING.

4–17. MECHANICAL PARTS.

4–18. Crank O-301 fits into a socket in the crank shaft of generator drive O-201. The main driving gear attached to the crank shaft actuates an assembly of two gears, which in turn drives a pinion attached to the end of the generator shaft. This gear train provides the step-up ratio necessary to drive generator G-201. (See figure 4-2.)

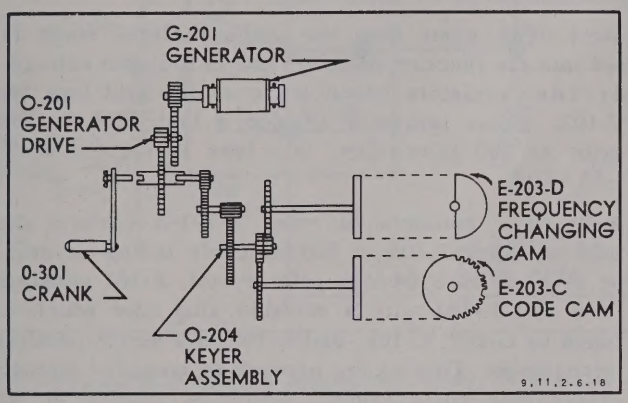


Figure 4–2. Radio Transmitter T-74/CRT-3 – Functional Diagram of Mechanical Parts

4–19. At the end of the crank shaft opposite the crank socket is a second socket which fits into a projection on keyer assembly O-204. The keyer assembly likewise contains a gear train, which in this case provides the step-down ratios required by the code and frequency-changing cams (E-203-C and E-203-D). The difference of two-to-one in the speeds of cams (E-203-C and E-203-D, respectively) is obtained by operating each cam from a different gear, and driving these gears by two pinions of different size on the shaft of the preceding gear.

4–20. Code cam E-203-C turns approximately once every 50 seconds and is coded for six repeating SOS sequences followed by a 25-second dash. The intervals in this and the next paragraph are based on the normal crank speed of 80 revolutions per minute. With faster crank speeds, the intervals will be shorter.

4–21. Frequency-changing cam E-203-D turns approximately once every 100 seconds. It serves to change frequencies every 50 seconds.

4–22. POWER SUPPLY. (See figure 4-3.)

4–23. Generator G-201 contains two windings. One winding furnishes the power for the filaments of the tubes, for the signal lamp when used, for ballast lamps E-201 and E-202, and for the relays. The two windings in series furnish the high-voltage power for the tube plates and screens.

4–24. Resistor R-201, in series with the coil of relay K-201, limits the current in this circuit so that the

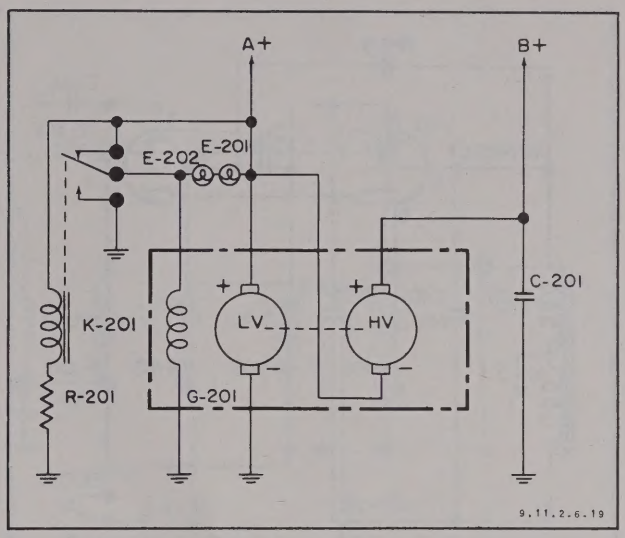


Figure 4–3. Radio Transmitter T-74/CRT-3 – Functional Diagram of Power Supply

relay will not be energized unless the voltage across the circuit exceeds the predetermined proper level. When a higher voltage is generated by rotating the crank, the relay contact arm is energized and first inserts the ballast lamps in series with the field coil and then grounds the field coil intermittently. In each case the ballast lamps are lighted. These ballast lamps are placed beneath the window and serve as speed indicator lights. As soon as the field coil is grounded, the turns in the generator armature windings cut fewer lines of force; hence the output voltage is lowered. When the low-voltage winding output drops sufficiently to release the relay contact arm, the field coil is again energized. The relay vibrates rapidly when it is operating properly. This oscillation of the relay contact arm continues to hold the voltages at the correct values unless the crank speed is reduced below the proper speed, (when the speed indicator lamps go out).

4–25. AUDIO CIRCUITS. (See figure 4–4.)

4–26. V-101 is a 12SC7 double triode. One half serves as an audio oscillator, while the other half serves as an audio amplifier. R-101 in the common cathode circuit furnishes a bias of approximately 4 volts for both sections of the tube.

4–27. The audio oscillator transformer is T-101, which is tuned to approximately 1000 cycles by C-101. The d-c load for the oscillator plate circuit is R-102; however, a-f oscillations are bypassed through C-102 into the primary coil of T-101. The oscillations in the primary are induced into the secondary of T-101. This feedback voltage is then impressed on the oscillator grid. A shunt-fed Hartley oscillator circuit is thus formed.

4–28. C-104 couples the audio amplifier to the audio oscillator stage. R-103 is the grid leak and R-104 the

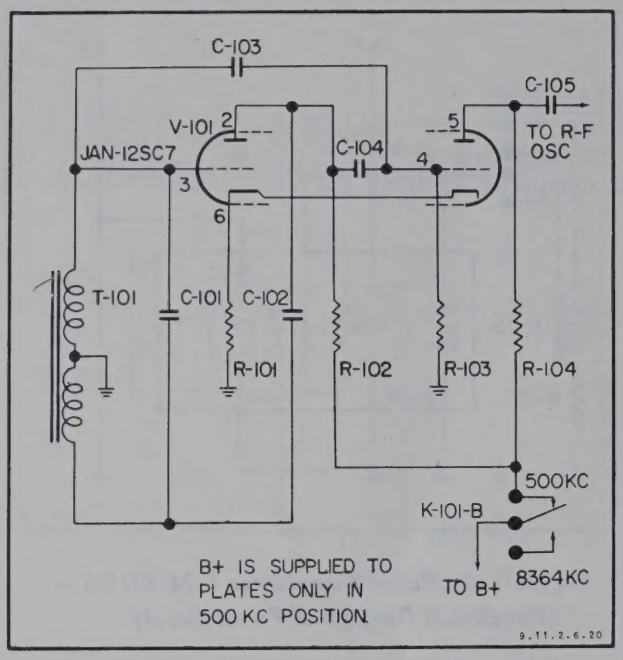


Figure 4–4. Radio Transmitter T-74/CRT-3 – Functional Diagram of Audio Circuits

plate load in the audio-amplifier stage. Since the audio positive peaks are so high as to make the grid positive, grid current flows and R-103 develops a grid bias of approximately 9 volts, which is added to the cathode bias to make a total bias of 13 volts.

4–29. Inverse feedback, to produce stability, is provided by C-103, which connects the grids of the two stages.

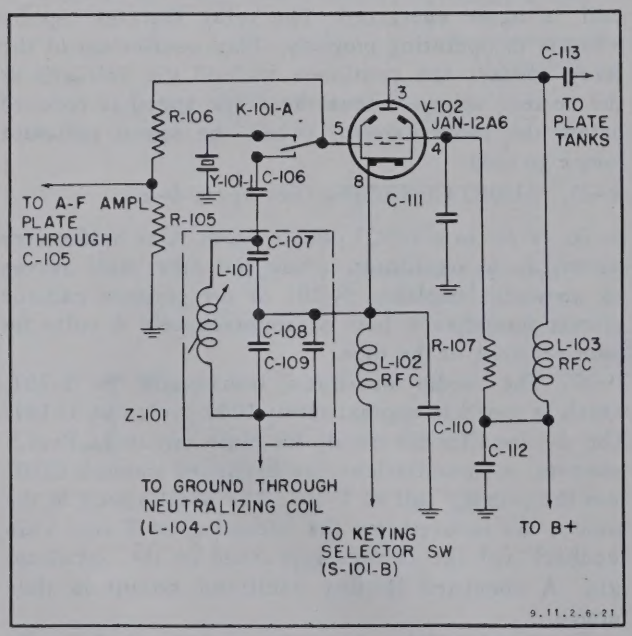


Figure 4–5. Radio Transmitter T-74/CRT-3 – Functional Diagram of R-F Oscillator Circuits

4–30. C-105 couples the audio amplifier and r-f oscillator stages.

4–31. Plate voltage is supplied to the audio stages through the normally closed contacts of relay K-101-B. However, when the relay is operated to the 8364-kilocycle position, the plate voltage is removed from these two stages and they do not operate.

4–32. R-F OSCILLATOR CIRCUITS. (See figure 4-5.)

4–33. V-102 is a 12A6 beam power amplifier tube. It functions as an r-f oscillator.

4–34. The input from the audio-amplifier stage is fed into the junction of R-105 and R-106, two voltage-divider resistors which serve as the grid leak for V-102. These resistors develop a high bias on the grid; at 500 kilocycles, this bias is approximately −65 volts.

4–35. The contacts of relay K-101-A connect the grid to either Z-101, a 500-kilocycle tuning network, or Y-101-1, an 8364-kilocycle crystal. Z-101 consists of a coil L-101 with a movable slug core which is tuned by C-107, C-108, and C-109 in a series-parallel arrangement. This tuning network is grounded through neutralizing coil L-104-C, which is coupled to the plate tank in order to provide negative feedback. Y-101-1 is connected directly between grid and ground.

4–36. L-103 blocks r-f oscillations, which are thus forced to pass through C-113 into one of the plate tanks. C-111 is a screen bypass capacitor which serves to pass r-f oscillations directly to ground. R-107 is a screen dropping resistor. C-112 is a bypass capacitor which serves to keep any stray r-f oscillations from getting into the power supply.

4–37. L-102, in the cathode circuit, blocks the r-f oscillations traveling from ground to cathode, forcing them to pass from ground to cathode by another route.

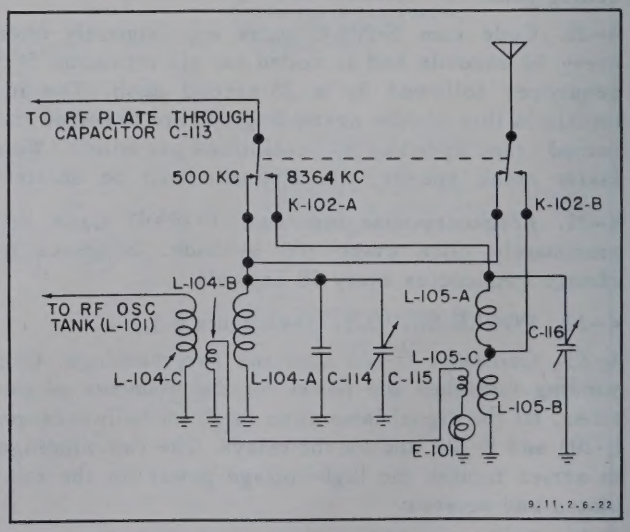


Figure 4–6. Radio Transmitter T-74/CRT-3 – Functional Diagram of Plate Tank Circuits

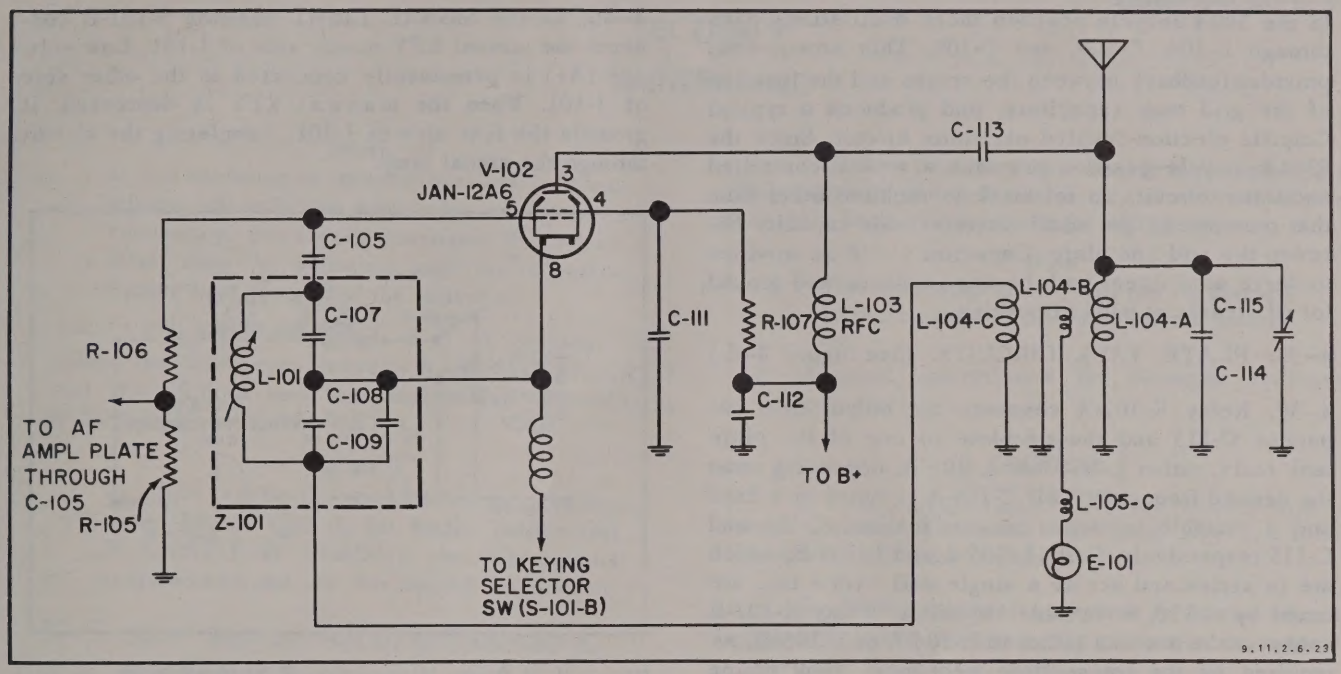


Figure 4–7. Radio Transmitter T-74/CRT-3 – Functional Diagram of R-F Circuits for 500 Kilocycles

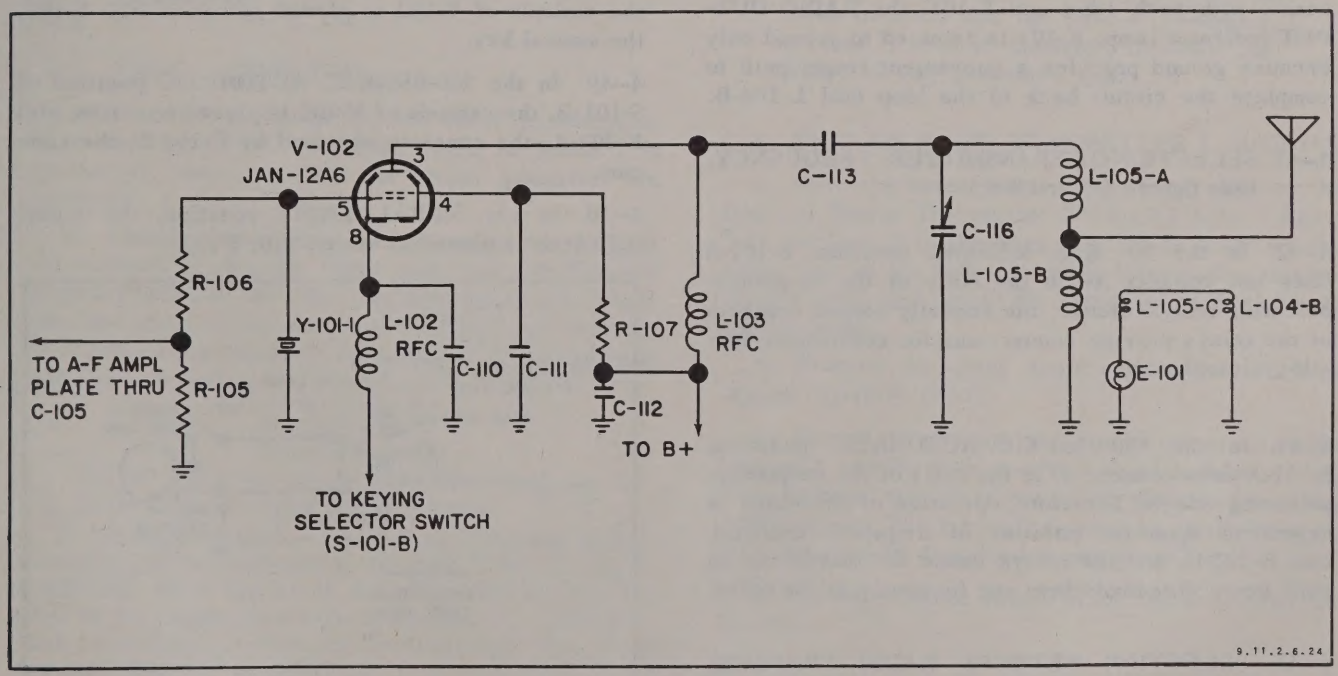


Figure 4–8. Radio Transmitter T-74/CRT-3 – Functional Diagram of R-F Circuits for 8364 Kilocycles

In the 500-kilocycle position these oscillations pass through L-104, C-108, and C-109. This arrangement provides feedback between the screen and the junction of the grid tank capacitors, and produces a typical Colpitts electron-coupled oscillator circuit. Since the 8364-kilocycle position provides a crystal-controlled oscillator circuit, no feedback is required other than that provided by the small interelectrode capacity between the grid and plate. Capacitor C-110 is provided to serve as a direct path between cathode and ground for r-f signals at 8364 kilocycles.

4–38. PLATE TANK CIRCUITS. (See figure 4–6.)

4–39. Relay K-102-A connects the output from capacitor C-113 and the r-f plate to one of the plate tank coils, either L-104-A or L-105-A, depending upon the desired frequency. Coil L-104-A is tuned by a fixed and a variable capacitor in combination, C-114 and C-115 respectively. Coils L-105-A and L-105-B, which are in series and act as a single coil with a tap, are tuned by C-116, a variable capacitor. Relay K-102-B connects the antenna either to L-104-A or L-105-B, as required by the transmitting frequency. Tank tuning does not affect the oscillation frequency at either 500 or 8364 kilocycles, since there is no coupling between the plate and grid circuits.

4–40. L-104-B and L-105-C are loops coupled to coils L-104-A and L-105-B respectively. These are in series with each other and E-101, the RADIO OUTPUT indicator lamp. E-101 is returned to ground only because ground provides a convenient return path to complete the circuit back to the loop coil L-104-B.

4–41. SELECTION OF TRANSMITTER FREQUENCY. (See figures 4-7 and 4-8.)

4–42. In the 500 K.C. MANUAL position, S-101-A does not connect A+ to the coils of the frequency-selecting relays. Hence, the normally closed contacts of the relays provide connections for continuous 500-kilocycle operation.

4–43. In the 500-8364 K.C. AUTOMATIC position, S-101-A does connect A+ to the coils of the frequency-selecting relays. Therefore, operation of the relays is dependent upon the position of frequency-changing cam E-203-D, and the relays cause the transmitter to shift every 50 seconds from one frequency to the other.

4–44. SELECTION BETWEEN RADIO TRANSMISSION AND SIGNAL LIGHT. (See figures 4-9 and 4-10.)

4–45. In both the 500 K.C. MANUAL and 500-8364 K.C. AUTOMATIC positions, S-101-A connects A+ to the filaments of both tubes.

4–46. In the SIGNAL LIGHT position S-101-B connects the manual KEY to one side of J-101. Low voltage (A+) is permanently connected to the other side of J-101. When the manual KEY is depressed, it grounds the first side of J-101, completing the circuit through the signal lamp.

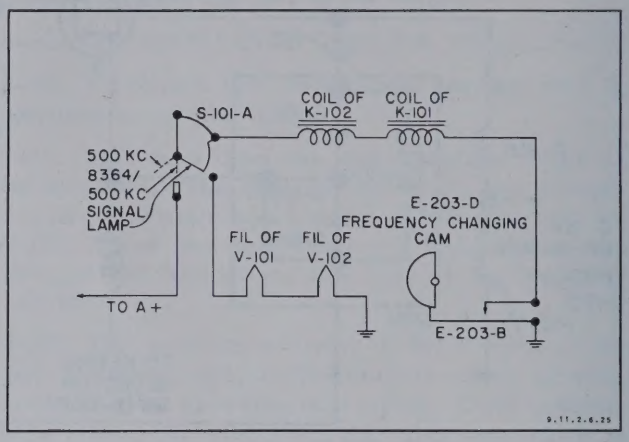


Figure 4–9. Radio Transmitter T-74/CRT-3–Functional Diagram of Circuits Affected by Switch S-101-A

4–47. SELECTION OF MANUAL OR AUTOMATIC KEYING. (See figures 4-9 and 4-10.)

4–48. In the 500 K.C. MANUAL position of S-101-B, the cathode of V-102 is placed in series with S-102, the manual key.

4–49. In the 500-8364K.C. AUTOMATIC position of S-101-B, the cathode of V-102 is placed in series with E-203-A, the contacts operated by E-203-C, the code cam.

4–50. In the SIGNAL LIGHT position, the signal light jack is placed in series with S-102.

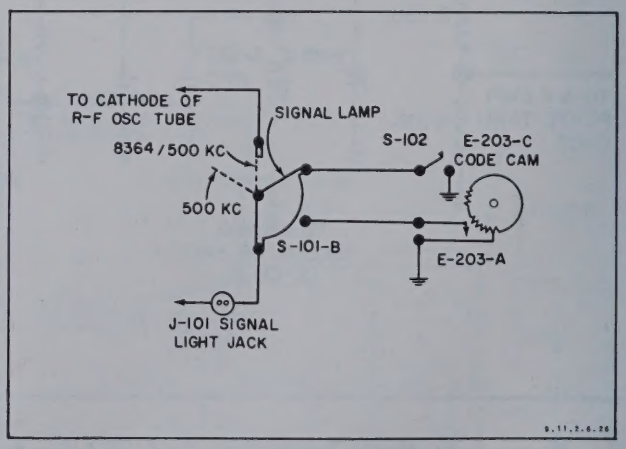


Figure 4–10. Radio Transmitter T-74/CRT-3 – Functional Diagram of Circuits Affected by Switch S-101-B

SECTION V

MAINTENANCE

Note

It is a violation of international law to transmit on 500 and 8364 kilocycles except in an emergency. For testing purposes, this equipment must be operated into the specified dummy load instead of the antenna.

5–1. GENERAL. Paragraph 1–3 of Section I explains the differences between Radio Sets AN/CRT-3 and AN/CRT-3A and their respective transmitters, T-74/CRT-3 and T-74A/CRT-3.

Note

In cases where the specialized test equipment, TS-522/CRT-3, for Radio Transmitter T-74/CRT-3 is available the instructions supplied with the test set should be followed.

5–2. INSPECTION OF RADIO SET AN/CRT-3.

5–3. EQUIPMENT REQUIRED. A radio receiver capable of receiving a 500 and a 1000-kilocycle mcw signal and an 8364-kilocycle cw signal is required. If two such receivers are available, the test procedure can be greatly simplified.

5–4.
5–5. DELETED
5–6.

5–7. VISUAL INSPECTION.

a. Unpack Bag BG-155-A, and check to determine that each piece of equipment listed in Table I is present. Make sure that the proper quantities are present.

b. Examine each piece of equipment for evidence of mechanical damage. Make sure that the kite and inflating tubes in the inner bag are undamaged. Examine the cans of Generator M-315-B and Balloon M-278-A. Check that keys are present and that opening tabs are not broken.

CAUTION

Do not open the sealed cans containing the balloons or the hydrogen generators.

c. Hydrogen generator can will be protected by inserting it into a fiberboard sleeve, AF S/N·8135-NL-69625-299, which has a 1/8 inch wide slit running parallel to the longitudinal axis of the sleeve. Inspect each can before insertion for serviceability. The following procedure will be followed:

1. Place a straight edge along the length of the can.

2. Measure the depth of dents.

3. Any single dent deeper than 3/16 inch will be cause for replacement of the can.

4. Dents occurring in a manner approximately radially opposed one to the other to a total depth of more than 3/16 inch will be cause for replacement.

Note

The fiberboard sleeve will not be discarded during the life of the hydrogen generator.

d. Disposal instructions for damaged hydrogen generators.

CAUTION

1. After a Generator has burst, handle with extreme caution. Personnel must wear gloves, a rubber apron and full face shield.

2. As the material generates hydrogen after being exposed to moisture, the generator must not be sealed in a tight container.

3. Disposal should be through regular base disposal channels, if impossible, by burying under three feet of earth.

Note

When burying, make sure container has six holes inserted into the side of generator, at least ½ inch in diameter, to allow the escape of any generated gas.

5–8. TEST OF RADIO TRANSMITTER T-74/CRT-3.

a. Open the antenna-reel compartment door on the front of Radio Transmitter T-74/CRT-3 (see figure 2-1) and lock it in the open position by inserting the cotter key in the hole provided. Unwind the antenna lead-in wire, and check the operation of Reel RL-48 and its brake.

b. Remove the crank shaft cap and insert Hand Crank CG-18-A (O-301).

c. Extend the antenna lead-in wire out in a straight line on a wooden floor or over a wooden chair or box. The antenna clip must not touch the ground or any metal object. The transmitter must be fairly close to the test receiver described in paragraph 5–3.

d. Set the selector switch in the 500 K.C.MANUAL position.

e. Tune the receiver used to 1000 kilocycles and turn the beat frequency oscillator switch (BFO) on the receiver off.

Note

The receiver is tuned to 1000 kilocycles because Radio Transmitter T-74/CRT-3, without an antenna load, emits a stronger second harmonic signal than a fundamental.

f. Turn the crank at a speed of about 80 to 100 revolutions per minute. Check that the speed indicator lamps are lit. Continue cranking for 20 or 30 seconds.

g. Depress the KEY button. Check that the RADIO OUTPUT light is lit. (It will be very dim without an antenna load.) Check that a signal is received on the monitoring receiver. Be sure that the signal is tone modulated.

h. Set the selector switch in the 500-8364 K.C. AUTOMATIC position.

i. Continue cranking until a signal is heard on the monitoring receiver (tuned to 1000 kilocycles). Check the automatic keying signal for six groups of SOS followed by a long dash of about 20 seconds duration.

j. Tune the monitoring receiver to 8364 kilocycles and turn on the beat frequency oscillator (BFO) switch on the receiver. The 8364-kilocycle signal is cw and cannot be heard on a receiver without a beat frequency oscillator.

k. Continue cranking until a signal is heard on the monitoring receiver. Check that the RADIO OUTPUT light is lit. It should go on and off with the automatic keying, and will usually be very dim while the transmitter is on 500 kilocycles, and then will usually be very bright during the 8364-kilocycle transmission Check the signal heard on the monitoring receiver for the same coding cycle as in step i.

l. Unscrew the cap of the desiccator well and examine the silica gel. If it is not blue in color, replace it with fresh desiccant. Replace the cap, tightly.

CAUTION

Make certain that the desiccator sack is securely tied so that the granules cannot spill out.

5–9. TEST OF SIGNAL LAMP M-308-B.

a. Insert the plug of Signal Lamp M-308-B into the SIGNAL LAMP SOCKET.

b. Set the selector switch to the SIGNAL LIGHT position.

c. Rotate the crank at a speed of about 80 to 100 revolutions per minute and depress the KEY button. Check that the lamp is lit, and that it can be keyed with the KEY button.

5–10. INSPECTION OF PARACHUTE M-390-B.

5–11. The inspection and repacking of Parachute M-390-B must be accomplished in accordance with Technical Order 13C5–10–2. All parachutes issued for service will be visually inspected by the using organization for general condition at least once every 60 days and more frequently if conditions demand. If, as a result of this periodic inspection, conditions are found that indicate need of repair or more thorough inspection, the parachute will be opened and completely inspected and repacked by qualified parachute repack personnel. Parachutes will be repacked by qualified parachute personnel when issued for use, or whenever exposed to water or moisture, or whenever a complete inspection is accomplished. Parachutes in use will be repacked at least once every 6 months or more often if conditions warrant.

5–12. REPACKING RADIO SET AN/CRT-3.

a. Replace the crank in the well on Radio Transmitter T-74/CRT-3. Be sure to secure it with the pin provided. Replace the crank socket cap.

b. Coil the antenna lead-in and close the antenna-reel door. Be sure it is not jammed with the lead-in wire and that it opens easily. Lock it with the cotter key.

c. Repack the equipment in Bag BG-155-A. Follow the arrangement shown in figure 8–3 to avoid possible damage to the equipment.

d. Lace Bag BG-155-A carefully. Snap both snaps of Parachute M-390-B to the V-rings of the bag.

5–13. REPAIR OF INSTALLED EQUIPMENT.

5–14. If the inspection directed above shows that one or more pieces of equipment are defective, those individual items of equipment may be replaced without replacing the entire Radio Set AN/CRT-3.

5–15. Repairs should not be attempted without adequate facilities.

5–16. PERFORMANCE CHECKS AT DEPOTS AND SUB-DEPOTS.

5–17. RADIO POWER OUTPUT MEASUREMENTS.

5–18. Radio power output measurements can be made without taking off the front cover. The following items of test equipment are required.

a. 1–660-micromicrofarad air or mica capacitor, ± 1%.

b. 1–96-micromicrofarad air or mica capacitor, ± 2%.

c. 1–0 to 500-milliampere r-f milliammeter.

d. 1–0 to 150-milliampere r-f milliammeter.

e. 1–34-ohm, ± 2%, non-inductive, 5-watt resistor (Ohmite type D-100, 34-ohm dummy antenna recommended).

f. 1–219-ohm, ± 2%, non-inductive, 5-watt resistor (Ohmite type D-100, 219-ohm dummy antenna recommended).

g. In addition, a receiver capable of receiving 500 and 8364 kilocycles (or harmonics of these frequencies) is required.

Note

Test Set TS-522/CRT-3 may be substituted for the items described above.

5–19. TO CHECK R-F POWER OUTPUT, 500 KILOCYCLES TRANSMISSION.

a. Unwind the antenna lead-in and connect it to the 34-ohm, non-inductive resistor, in series with the 660-micromicrofarad capacitor and the 0 to 500-milliampere r-f milliammeter. These components are connected in series, with one terminal of the meter going directly to a rim screw or chassis ground. Keep all the leads as short as possible.

b. Uncoil antenna lead-in. It must be kept away from all metal objects (including the transmitter).

c. Adjust the monitoring receiver to 500 kilocycles (or a harmonic frequency). The beat frequency oscillator (BFO) switch on the receiver should be in the OFF position.

d. Set selector switch S-101 (see figure 2–1) to 500 K.C. MANUAL and crank for 20 seconds to heat the tube filaments.

e. Depress the KEY (see figure 2–1) and read the r-f current. The r-f current should be at least 225 milliamperes.

f. Change the setting of selector switch S-101 to 500-8364 K.C. AUTOMATIC position and note the value of the r-f current produced during the 500 kilocycle sustained dash (check with monitoring receiver). It should be of the same value as that produced in step e. It is important to remember that when the selector switch is in the 500-8364 K.C. AUTOMATIC position the transmitter is operating on 500 kilocycles one-half of the time, and on 8364 kilocycles the balance of the time, with each frequency transmission lasting approximately 40 seconds. Disregard the r-f meter readings when the transmitter is transmitting on 8364 kilocycles but connected to the 500-kilocycle dummy antenna.

g. Check the signal in the receiver to be sure the transmitted wave is tone modulated with the 1000-cycle note.

h. Check the automatic code sequence for 6 groups of SOS followed by a sustained dash of approximately 20 seconds.

5–20. TO CHECK R-F POWER OUTPUT, 8364-KILOCYCLE TRANSMISSION.

a. Unwind the antenna lead-in and connect it to the 219-ohm non-inductive resistor; in series with the 96-micromicrofarad capacitor and the 0 to 150-milliampere r-f milliammeter. These components are connected in series, with one terminal of the meter going directly to a rim screw or chassis ground. Keep all leads as short as possible.

b. Uncoil antenna lead-in. It must be kept away from all metal objects (including the transmitter).

c. Adjust the monitoring receiver to 8364 kilocycles. The beat frequency oscillator (BFO) switch on the receiver should be in the ON position.

d. Set selector switch S-101 (see figure 2–1) to 500-8364 K.C. AUTOMATIC and crank for 20 seconds to heat the tube filaments.

e. Read the r-f current when the wave-change mechanism is in the 8364-kilocycle position (check with the monitoring receiver) and the coding mechanism is producing the sustained dash. The minimum r-f current should be 85 milliamperes. Disregard the r-f meter readings when the transmitter is transmitting on 500 kilocycles during this test. The monitor receiver prevents confusion in determining which frequency is being transmitted as well as a means of checking the coding sequence.

5–21. LOW VOLTAGE MEASUREMENT. The low voltage supply can be checked without removing the front cover of transmitter T-74/CRT-3. Set selector switch S-102 to SIGNAL LIGHT, insert probe of a d-c voltmeter (0 to 50-volt scale) into the signal light receptacle J-101. Crank the transmitter until the speed indicator lamps E-201 and E-202 are lit and depress KEY S-102. The limits of this measurement are 24 to 31 volts d c.

5–22. MAJOR CAUSES OF TROUBLE.

Note

Do not remove the front cover of Radio Transmitter T-74/CRT-3 unless it is definitely ascertained that repairs are required. Repairs should be undertaken only by authorized personnel and then only when parts and proper test equipment are available. Whenever the front cover of the radio transmitter is removed for any reading the silica gel desiccant must be renewed before it is placed in service again.

5–23. TUBES V-101 AND V-102. To remove tubes for testing or replacement, first remove the springs holding them in their sockets. Slide the small end of the spring out of the groove, then push the large end off the top of the tube, and finally slide the spring away to one side. Then take the tube out in the usual manner. Be sure to replace the spring after putting the tube back. It is advisable to check the power output as described in paragraphs 5–19 and 5–20, after changing tube V-102 (JAN-12A6). It is usually unnecessary to resonate the plate-tank circuits with a change of tubes unless a decided loss of r-f power is experienced. If loss of power is experienced, try substituting another JAN-12A6 tube. Sometimes tube selection is required, as about one tube in ten will have low output.

5–24. CRYSTAL Y-101-1. In cases where there is no 8364-kilocycle transmission, but Radio Transmitter T-74/CRT-3 functions on 500 kilocycles, check crystal Y-101-1. (See figure 8–4.) The best method of checking the 8364-kilocycle crystal Y-101-1 is to substitute a crystal known to be good. A dummy antenna and an r-f meter should be used as described in paragraph 5–20. Minimum r-f current under such conditions should be 85 milliamperes. Be sure the clamp, which holds crystal Y-101-1 in its socket, is replaced before closing up the transmitter.

5–25. LAMPS E-101, E-201, AND E-202. To test or replace ballast lamps E-201 and E-202 or the r-f indicator lamp E-101 (see figure 8–5 and 8–6), remove the lamps from their sockets and check continuity. To test or replace the bulb in Signal Lamp M-308-B unscrew the clear dome.

5–26. RELAYS.

5–27. WAVE-CHANGE RELAYS K-101, K-102. The wave-change relays K-101 and K-102 (see figures 8–4 and 8–5) should both close with approximately 20 volts or less being generated by generator G-201 between terminals No. 2 and No. 6 of plug P-101. (See figures 8–4 and 8–5.) This lower voltage can be obtained by cranking the transmitter at a slow speed. The relays are adjusted at the factory, and should require no further adjustment. If it is found necessary to readjust the relays, a screw located on each relay determines the voltage at which the relay will close. To cause the relay to close at a lower voltage, adjust the screw in a clockwise direction. To clean the contact points, use a contact burnisher or an ordinary paper strip; do not use a file. The relay coil resistance is 250 ohms.

5–28. VOLTAGE REGULATOR RELAY K-201. The voltage regulator relay K-201 (see figure 8–6 and 8–7) determines the voltage of Radio Transmitter T-74/CRT-3. With the radio transmitter in an operating condition and during the transmission of the sustained 20-second dash on either frequency, the voltage between terminals No. 2 and No. 6 of plug P-101 (see figures 8–4 and 8–5) should be between 24 and 31 volts d c at a cranking speed of 80 to 100 revolutions per minute. If the measured voltage is outside of these limits the regulator should be readjusted by means of the screw located on relay K-201. (See figure 8–7.) To lower the voltage turn the screw in a clockwise direction. There is no adjustment of the high voltage potential. For each volt change of the low voltage, the high voltage will change approximately 10 volts. The spacing of contacts should be approximately 0.003 inches. To clean the contact points use a contact burnisher or an ordinary paper strip; do not use a file. The coil resistance is 1000 ohms.

5–29. CODE AND WAVE-CHANGE CONTACTS. Contacts E-203-A and E-203-B (see figures 8–6 and 8–7) on the code and wave-change assembly may be checked by disconnecting jack J-201 from the cover and checking it with a continuity meter while cranking the unit at low speed. Connect the low range of the continuity meter between terminals No. 1 and No. 2 of J-201 for checking wave-change operation, and between terminals No. 2 and No. 4 of J-201 for checking the "SOS" sustained dash sequence (see figure 8–6).

5–30. VARIABLE CAPACITORS. The two air variable capacitors C-115 and C-116 (see figures 8–4 and 8–5) should be examined for metal particles between the plates. Use paper strips to clean them. Check for damaged rotor plates touching the stator plates. Do not change setting of either variable air capacitors, unless the special equipment for readjustment (refer to paragraph 5–58) is available.

5–31. TESTING PROCEDURE.

5–32. Testing procedure is based on a breakdown of major divisions to localize the source of trouble. After the trouble is localized, point to point testing is begun. These tests require the removal of the front cover.

5–33. POWER SUPPLY TESTING. The following steps should be followed in the testing of the power supply:

a. If another power supply for Radio Transmitter T-74/CRT-3 is available, simply switch power supplies and note if the transmitter functions normally.

b. Check regulator relay K-201 as directed in paragraph 5–28.

c. Be sure plug P-101 (see figures 8–4 and 8–5) is inserted in receptacle J-201 (see figure 8–6). Crank the transmitter at a speed of approximately 80 to 100 revolutions per minute and measure the high potential voltage between terminals No. 2 and No. 3 of J-201. The normal voltage should be between 280 and 360 volts d c and may show some unsteadiness. Measure the low potential voltage between terminals No. 2 and No. 6 of receptacle J-201. The normal voltage should be between 24 and 31 volts d c. The speed indicator lamps (see figure 8–6) should light. If the above voltages are obtained and contact tests of paragraph 5–28 prove satisfactory it is reasonable to assume that the power supply is operating normally.

d. If the tests of paragraph c. preceding, prove that the voltage is sub-normal or non-existant, proceed as follows.

1. Disconnect plug P-101 from receptacle J-201. If the voltages now become normal, it can be assumed that a short circuit exists in the cover.

2. Unsolder filter capacitor C-201 (see figures 8–6 and 8–7) and repeat the tests in paragraph c. preceding. If the voltages are now normal the filter capacitor is evidently shorted. Replace it.

e. Check the continuity of all wiring, especially that to receptacle J-201 (see figure 8–6) for broken leads.

f. Check the speed indicator lamps E-201, E-202 according to paragraph 5–25.

5–34. COVER TESTING. The cover testing should be divided into the following two classifications: first, when one frequency (either 500 kilocycles or 8364 kilocycles) operates normally; second, when neither frequency operates normally.

5–35. ONE FREQUENCY OPERATES NORMALLY.

5–36. If frequency transmission of 500 kilocycles is normal but transmission of 8364 kilocycles is defective:

a. Place selector switch S-101 in the 500-8364 K.C. AUTOMATIC position.

b. Check crystal Y-101-1 (see figure 8–4) by substitution. (Refer to paragraph 5–24.)

c. Check selector switch S-101 (see figures 8–4 and 8–5) for continuity and contact operation.

d. Check the wave-change relays K-101, K-102. (See figure 8–4 and refer to paragraph 5–27.)

1. Visually check if relays K-101 and K-102 open and close with continued cranking of the transmitter.

2. Clean the contacts of relays K-101 and K-102 with a contact burnisher or a strip of ordinary paper; do not use a file.

3. Check all the leads on relays K-101 and K-102.

e. Check the variable capacitor C-116 (see figure 8–4) for metal particles shorting the plates. Check for damaged rotor plates touching the stator plates. Do not change the setting of this capacitor.

f. Check the mica capacitor C-110. (See figure 8–4.)

g. Check all leads to L-105-A, L-105-B, and L-105-C.

h. Check resistor R-106, 27,000 ohms.

i. Check resistor R-105, 33,000 ohms.

5–37. If transmission of 8364 kilocycles is normal, but transmission of 500 kilocycles is defective:

a. Check continuity of L-101. (See figures 8–4 and 8–5.)

b. Check all leads on and to Z-101. (See figure 8–4.) Check capacitors C-107, C-108, and C-109.

c. Check wave-change relays K-101 and K-102. (See figure 8–4 and refer to paragraph 5–27.)

1. Visually check if relays open and close with continued cranking of the transmitter.

2. Clean the contacts of relays K-101 and K-102 with a contact burnisher or a strip of ordinary paper; do not use a file.

3. Check all the leads on and to relays K-101 and K-102 and selector switch S-101. (See figure 8–4.)

d. Check the variable capacitor C-115 (see figures 8–4 and 8–5) for metal particles shorting between plates, or damaged plates. Do not change setting of this capacitor.

e. Check capacitor C-114. (See figures 8–4 and 8–5.)

f. Check all leads to L-104-A, -B, and -C. (See figure 8–4.) Check continuity of L-104-A, -B, and -C.

g. Check capacitor C-106. (See figure 8–4.)

5–38. If the 500-kilocycle frequency is functioning, but is unmodulated, check JAN-12SC7 (V-101) and all components associated with this tube.

5–39. If the 500-kilocycle frequency functions with the selector switch S-101 (see figure 2–1) in the 500-8364 K.C. AUTOMATIC position but not in the 500 K.C. MANUAL position, check KEY S-102 for broken leads and selector switch S-101 (see figure 8–4) for continuity.

5–40. RADIO TRANSMITTER T-74/CRT-3 INOPERATIVE ON BOTH FREQUENCIES. (The power supply is assumed to have been tested and found normal.)

a. Check tube JAN-12SC7 (V-101), and tube JAN-12A6 (V-102).

b. Check coil L-102 (see figure 8–4) for open circuit. The resistance of coil L-102 is 23 ohms.

c. Check coil L-103 (see figure 8–4) for open circuit. The resistance of coil L-103 is 38 ohms.

d. Check resistor R-107 (see figure 8–4) for open circuit. The resistance of resistor R-107 is 33,000 ohms.

e. Check leads to relays K-101 and K-102. (See figure 8–4.)

f. Check continuity of switch S-101. (See figure 8–4.)

g. Check capacitor C-113. (See figure 8–4.)

h. Check capacitor C-112. (See figure 8–4.)

i. Check capacitor C-110. (See figure 8–4.)

j. Check capacitor C-111. (See figure 8–4.)

5–41. RADIO TRANSMITTER T-74/CRT-3 OPERATIVE ON BOTH FREQUENCIES, BUT SIGNAL LAMP M-308-B INOPERATIVE.

a. Check bulb, socket, cord, and plug of Signal Lamp M-308-B for continuity.

b. Check jack J-101, switch S-101-B, and key S-102 for continuity.

5–42. REPAIR DATA.

5–43. TROUBLE CHART. Table II lists probable symptoms, trouble locations and probable remedies.

Note

Special test equipment is required for adjustment of variable capacitors C-115 and C-116. See paragraph 5–60.

TABLE II. TROUBLE CHART

Symptom	*Trouble Location*	*Remedy*
No high voltage, low voltage present	Capacitor C-201	Replace
	Capacitor C-111	Replace
	Capacitor C-113	Replace
	Capacitor C-112	Replace
	Generator G-201	Replace
	Relay K-201	Replace or repair
	Tube V-101 (JAN-12SC7)	Replace
	Tube V-102 (JAN-12A6)	Replace

TABLE II. TROUBLE CHART (Contd)

Symptom	*Trouble Location*	*Remedy*
No 500-kilocycle transmission (8364-kilocycle normal)	Coil L-101	Replace Z-101
	Capacitor C-107	Replace Z-101
	Capacitor C-108, C-109	Replace Z-101
	Capacitor C-106	Replace
	Capacitor C-114	Replace
	Relays K-101 and K-102	Repair or replace
	Variable Capacitor C-115	Clean, repair or replace
	Selector switch S-101-A, -B	Replace
	Coil L-104-A, -C	Repair or replace
No 8364-kilocycle or 500-kilocycle transmission	Tube V-101 (JAN-12SC7)	Replace
	Tube V-102 (JAN-12A6)	Replace
	Coil, Choke L-102	Replace
	Coil, Choke L-103	Replace
	Capacitor C-111	Replace
	Capacitor C-113	Replace
	Capacitor C-112	Replace
	Capacitor C-110	Replace
	Switch S-101-A, -B	Replace
	Relays K-101-A, -B, K-102-A, -B	Replace or repair
	Resistor R-107	Replace
No low voltage or high voltage	Generator G-201	Replace
	Relay K-201	Replace or repair
No voltage regulation	Relay K-201	Replace or repair
	Resistor R-201	Replace
	Lamps E-201, E-202	Replace
No 8364-kilocycle transmission (500-kilocycle normal)	Crystal Y-101-1	Replace
	Switch S-101	Replace
	Relay K-101, K-102	Replace or repair
	Variable Capacitor C-116	Clean, repair or replace
	Capacitor C-110	Replace
	Resistor R-105	Replace
	Resistor R-106	Replace
	Coil L-105-A, -B	Replace or repair
No signal light operation	Switch S-101-A, -B	Replace
	Switch S-102	Replace
No frequency switching in 500-8364 K.C. AUTOMATIC operation	Cam E-203-D	Tighten
	Contacts E-203-B	Adjust
	Relays K-101, K-102	Replace or repair
	Selector switch S-101-A, -B	Replace
	Gear train	Replace
No automatic code 500 K.C. MANUAL (operation normal)	Cam E-203-C	Tighten
	Contacts E-203-A	Adjust
	Selector switch S-101-A, -B	Replace
	Gear train	Replace
Low r-f power on both frequencies	Weak tube V-102 (JAN-12A6)	Replace tube
	Relay K-102	Readjust
	Capacitor C-115 (on 500 kilocycles)	Retune
	Capacitor C-116 (on 8364 kilocycles)	Retune
	Capacitor C-111	Replace
	Capacitor C-113	Replace
	Resistor R-107	Replace
No 500 K.C. MANUAL	Switch S-101-A, -B	Replace
	Switch S-102	Replace
No modulation (used on 500 kilocycles)	Tube V-101 (JAN-12SC7)	Replace
	Transformer T-101	Replace
	Capacitor C-103	Replace
	Capacitor C-101	Replace
	Capacitor C-102	Replace
	Capacitor C-104	Replace
	Capacitor C-105	Replace
	Resistor R-101	Replace
	Resistor R-103	Replace
	Resistor R-104	Replace
	Resistor R-105	Replace
	Resistor R-106	Replace

5–44. RESISTANCE VALUES.

5–45. RESISTANCE CHECK POINTS ON THE COVER. Resistance check points on the cover are shown in figure 8–12. The points between which the readings are taken are indicated by lines. The selector switch S-101 is in the 500 K.C. MANUAL position. The power supply is disconnected from the cover by removing plug P-101 from receptacle J-102.

5–46. RESISTANCE CHECK POINTS ON THE POWER SUPPLY. Resistance check points on the power supply are shown in figure 8–10. The points are taken above chassis ground as indicated on diagram. The power supply is disconnected from the cover by removing plug P-101 from receptacle J-201. The crank is rotated until the wave-change contacts, E-203-B, and the code contacts, E-203-A, are both in the "closed" position.

5–47. TUBE SOCKET VOLTAGES. The tube socket voltages between the pins and chassis ground are shown in figure 8–13. Set the selector switch S-101 to 500 K.C. MANUAL and depress KEY. The crank speed should be between 80 and 100 revolutions per minute and the speed indicator lamps should be lit. Two types

of voltmeter readings are listed, namely, 1000-ohms-per-voltmeter readings, and 20,000-ohms-per-voltmeter readings. Readings are based upon a low voltage potential supply to the cover of 25 volts d c and a high-potential voltage supply of 320 volts d c. The actual readings may vary ±15 per cent from the voltages shown in figure 8–13 and still be acceptable. The antenna lead-in should be unwound and stretched out, free from all metallic objects.

5–48. VOLTAGE VALUES.

5–49. Voltage check points on the cover of Radio Transmitter T-74/CRT-3 are shown in figure 8–13. Readings refer to chassis ground and are listed for 1000-ohms-per-voltmeter (above line), 20,000-ohms-per-voltmeter (below line), and in some cases for vacuum tube voltmeter (VTVM) readings. All readings may be ±15 per cent of the stated voltage. The voltages are given for the transmitter operating on 500 K.C. MANUAL with KEY depressed. The antenna lead-in should be unwound and stretched out, free from all metallic objects. The crank speed should be between 80 and 100 revolutions per minute with the speed indicator lamps lit.

5–50. Approximate voltages above ground for the power supply of Radio Transmitter T-74/CRT-3 are shown in figure 8–11. Readings are given for 1000-ohms-per-voltmeter and 20,000-ohms-per-voltmeter. The crank speed should be between 80 and 100 revolutions per minute. The speed indicator lamps should light. The cover should be disconnected from the power supply by unplugging plug P-101. All readings ±15 per cent of given values are acceptable.

5–51. External power supplies may be used while testing or adjusting. The low voltage supply should be between 24 and 31 volts d c, connect the negative lead to chassis ground or terminal No. 2 of plug P-101 and the positive lead to terminal No. 6 of plug P-101. The high voltage supply should be approximately 320 volts d c. Connect the negative lead to chassis ground or terminal No. 2 of plug P-101 and the positive lead to terminal No. 3 of plug P-101. Terminal No. 4 should be grounded for a constant signal. For 500-kilocycle transmission, terminal No. 1 should be open; for 8364 kilocycle operation, No. 1 terminal should be grounded, as this closes the wave-change relays K-101 and K-102.

5–52. SPECIAL MAINTENANCE OPERATIONS.

5–53. The chassis may be removed from the cover by the removal of three No. 6 screws. The necessary wiring must be unsoldered.

5–54. Adequate lubrication is provided on all components for the normal life of the equipment. Additional lubrication may be detrimental to its operation. Check to be sure that the brushes are free in the brush-holder. The brushes of the generator should not require replacement, however, if the generator brushes must be replaced, fit them to the contour of commutator.

CAUTION

Be sure the transmitter generator is rotated a few times once every month to keep the grease from freezing or packing in the bearings.

5–55. The frequency-changing cam E-203-D and code cam E-203-C are indexed at the factory for properly synchronizing the transmissions, to allow six full groups of SOS and one sustained dash of approximately 20 seconds duration, to be transmitted on each frequency alternately. Should this sequence become broken by misalignment of the two cams E-203-D and E-203-C, (see figure 8–7) it is necessary to loosen the top nut No. 10-32 which secures code cam E-203-C to the shaft. Remove the code cam and check that the 1/2-inch nut securing frequency-changing cam E-203-D to its shaft is tight. Rotate the power unit with the crank until the two indexing holes in frequency-changing cam are in line with the corresponding holes in the assembly plate. Replace the code cam E-203-C in such a manner that the two index holes in the assembly plate, frequency-changing cam E-203-D, and code cam E-203-C are all in line. This line up process should be done by placing two 3/16-inch rods or equivalent size drills through the above mentioned holes. Be sure all nuts are tight before removing the alignment rods. Check contacts E-203-A and E-203-B to be sure they open and close properly with continued cranking. When the index holes in the code and frequency-changing cams are properly aligned with those in the plate, the cam blades of contacts E-203-A and E-203-B should be in such a position as to require about 1/16-inch travel of the cams to cause contact E-203-A to open a little ahead of contact E-203-B. Turn the crank just enough to open both contacts and check the contact spacing. The cam blades themselves are normally sprung enough to allow them to drop to the bottom level of code cam E-203-C and to the ledge provided on the trailing edge of frequency-changing cam E-203-D. The contact spacing should be not less than 0.010 inch and not more than 0.018 inch and, as near as possible, the same on both sets of contacts.

5–56. Since the gears in each of these two units are matched so as to obtain a perfect fit, individual gears are not supplied as spares. Obtain a complete unit to replace the defective one, or attempt to match individual gears from stocks of salvaged parts.

5–57. In case it is impossible to replace the desiccator unit due to a shortage of supplies, reactivate the desiccant as follows: Open the cloth bag containing the silica gel and remove the silica gel, placing it in a flat pan. Heat the silica gel to a temperature of 177°C (350°F) until it assumes a deep blue color. During

this heating it is advisable to stir the particles occasionally so that all are evenly heated. Do not exceed a temperature of 400°C (750°F) or the activity of the silica may be permanently impaired. Dry out the cloth bag thoroughly by heating, being careful not to burn the cloth. Refill the bag and replace it in the equipment.

CAUTION

If the silica gel turns amber, brown or black, it has been raised to an excessive temperature and must not be used.

5-58. SPECIAL ADJUSTMENTS.

5-59. GENERAL. Three radio-frequency circuits of Radio Transmitter T-74/CRT-3 are adjustable. These are the 500-kilocycle grid tank circuit Z-101, the 500-kilocycle plate tank circuit (L-104, C-114, and C-115), and the 8364-kilocycle plate tank circuit (L-105, C-116). The first of these adjustments sets the frequency of the transmitter; the other two pre-tune the transmitter to the 306-foot antenna which it will be required to feed in operation. All are preset at the factory and should normally require no adjustment. When the need for readjustment has been definitely ascertained, the procedure described herein must be followed.

5-60. EQUIPMENT REQUIRED.

5-61. For convenience, use an external power supply such as described in paragraph 5-51.

Note

If an external power supply is unavailable, the power supply of the transmitter itself may be used. One man must be available to crank while another performs the adjustments. As many as three men may be needed and modification in the process below will be necessary.

5-62. The equipment required for radio power output measurements is listed in paragraph 5-17.

5-63. A frequency meter (such as Frequency Meter Set SCR-211-J) or a wavemeter covering the frequencies used is needed.

5-64. ADJUSTMENT OF 500-KILOCYCLE GRID TANK CIRCUIT.

Note

Do not attempt this adjustment unless accurately calibrated frequency measuring equipment is available. If this adjustment is improperly made, the transmitter will operate in a perfectly normal fashion, but it will transmit on the wrong frequency so that rescue stations monitoring 500 kilocycles cannot hear its signals.

5-65. Perform this adjustment whenever coil and capacitor assembly Z-101 is replaced, or when inspection indicates that the 500-kilocycle signals from Radio Transmitter T-74/CRT-3 are off frequency. The measurement described in steps a., b., and c. below should be part of any major overhaul of the transmitter.

a. Operate Radio Transmitter T-74/CRT-3 in the manner prescribed in paragraph 5-19 for measurement of power output on 500 kilocycles. Note the power output.

b. Measure the frequency of the transmitter with the frequency meter. (If the 1000-cycle modulation interferes with the measurement, remove it by opening the transmitter, and placing a piece of paper between the points of section K-101-B of relay K-101. Do not disturb the other sections of this relay. Close the transmitter case before proceeding with the measurement.)

c. If the frequency of Radio Transmitter T-74/CRT-3 is within 750 cycles of 500 kilocycles, do not attempt to retune it. If the frequency of the transmitter is further off frequency than this limit, note the frequency measurement.

d. Remove the cover from the case, disconnect it from the hand cranked power supply, and connect it to the external power supply.

e. Produce a steady 500-kilocycle signal by setting the selector switch to 500-8364 K.C. AUTOMATIC and by grounding terminal 4 of plug P-101.

f. Remeasure the frequency.

g. Subtract the frequency measured with the transmitter in the case (see step c. above) from the frequency measured with the transmitter outside the case (see step f. above). Add the difference (it will be about 300 to 400 cycles) algebraically (that is, with proper regard for sign) to 500 kilocycles and set the frequency meter to this frequency.

h. Loosen the jam nut holding the grid tuning screw L-101.

i. Adjust the grid tuning screw L-101 until the frequency of Radio Transmitter T-74/CRT-3 is the same as the frequency set on the frequency meter.

j. Tighten the jam nut and check that this has not changed the frequency.

k. Disconnect the external power supply and put the transmitter back in its case. Repeat steps a. and b. above.

l. If the frequency of the transmitter is not within 250 cycles of 500 kilocycles, repeat the adjustments above until it is within this limit.

m. If the power output is more than 5 per cent less than the power output noted in step a., retune the

500-kilocycle plate tank circuit as described below.

Note

Do not forget to remove the paper from relay K-101 if the modulation was disconnected in that manner.

n. Close the transmitter tightly; renew the desiccant; and perform the inspection described in paragraphs 5–2 through 5–12.

Note

Do not attempt the following adjustments unless accurate dummy antennas are available. If this adjustment is improperly made, the transmitter will operate in a perfectly normal fashion, but it will be tuned to operate into an antenna of different length than the 306 feet of Antenna Assembly AS-207/CRT-3, so that when connected to the antenna furnished it will be mismatched and considerable power will be lost. The RADIO OUTPUT light will not indicate this mismatch.

5–66. ADJUSTMENT OF 500-KILOCYCLE PLATE TANK CIRCUIT.

5–67. Perform this adjustment whenever capacitor C-114 or C-115, or coil L-104 are repaired or replaced, or whenever capacitor C-115 has had its setting disturbed. Perform this adjustment also if the power output on 500 kilocycles is below the limit required in paragraph 5–19.

Note

Check the power supply voltages, and try substituting several other JAN-12A6 vacuum tubes before attempting to increase the power by performing the adjustment.

a. Remove the cover from the case of Radio Transmitter T-74/CRT-3, and disconnect it from the power supply. Connect it to an external power supply.

b. Connect the transmitter to the proper dummy antenna for 500-kilocycle operation as described in paragraph 5–19. Be sure that the antenna lead-in is in one loop, clear of the transmitter and dummy antenna.

c. Produce a steady 500-kilocycle signal by setting the selector switch to 500-8364 K.C. AUTOMATIC and by grounding terminal 4 of plug P-101.

d. Loosen the locknut on the shaft of variable capacitor C-115.

e. Change the setting of capacitor C-115, using an aligning tool or a phenolic rod sharpened to a screwdriver point, until the reading of the r-f milliammeter in the dummy antenna is a maximum.

f. Tighten the locknut, and check to be sure that the reading on the r-f milliammeter is unchanged.

g. Put the transmitter back in its case; close it tight; renew the desiccant, and perform the inspection described in paragraphs 5–2 through 5–12.

5–68. ADJUSTMENT OF 8364-KILOCYCLE PLATE TANK CIRCUIT.

5–69. Perform the adjustment whenever capacitor C-116 or coil L-105 are repaired, replaced, or whenever capacitor C-116 has had its setting disturbed. Perform this adjustment also if the power output on 8364 kilocycles is below the limit required in paragraph 5–20.

Note

Check the power supply voltages, and try substituting several other JAN-12A6 vacuum tubes before attempting to increase the power by performing this adjustment.

a. Remove the cover from the case of Radio Transmitter T-74/CRT-3 and disconnect it from the power supply. Connect to an external power supply.

b. Connect the transmitter to the proper dummy antenna for 8364-kilocycle operation as described in paragraph 5–20. Be sure that the antenna lead-in is in one loop, clear of the transmitter and dummy antenna.

c. Produce a steady 8364-kilocycle signal by setting the selector switch to 500-8364 K.C. AUTOMATIC and by grounding terminals 1 and 4 of plug P-101.

d. Loosen the locknut on the shaft of variable capacitor C-116.

e. Change the setting of capacitor C-116, using an aligning tool or a phenolic rod sharpened to a screw-driver point, until the reading of the r-f milliammeter in the dummy antenna is a maximum.

f. Tighten the locknut. Check to be sure that the reading on the r-f milliammeter is unchanged.

g. Put the transmitter back in its case; close it tight; renew the desiccant, and perform the inspection described in paragraphs 5–2 through 5–12.

SECTION VI
SUPPLEMENTARY DATA

(Not Applicable)

SECTION VII

TABLE OF REPLACEABLE PARTS

7–1. CONTENT AND ARRANGEMENT OF TABLE.

7–2. Listings in the Table of Replaceable Parts do not constitute a complete breakdown of the equipment but consist of all electrical parts and such operative mechanical parts, with the exception of structural and minor parts such as standard bolts, screws, nuts, etc., that are subject to loss or failure.

7–3. Parts are grouped by major assemblies. Under each major assembly they are listed (1) alphabetically according to type and (2) numerically under each type.

7–4. ORDERING SPARE PARTS.

7–5. GENERAL. Each Service using the Table of Replaceable Parts has established certain depots and service groups for the storage and issue of spare parts. The regulations of each Service should be studied to determine the method of requisitioning spare parts and the sources from which they may be obtained. Information in the table pertaining to manufacturers' or contractors' names, types, models, or drawing numbers is not to be interpreted as authorization to field agencies to attempt to purchase identical or comparable spare parts directly from wholesale or retail stores except under emergency conditions as covered by the existing regulations of the Service concerned.

7–6. The Table of Replaceable Parts is for information only and is not to be construed as a list of allowances of maintenance parts or components. Organizations using this equipment will consult applicable USAF Technical Orders of the 00-30 and 00-30A series. Higher maintenance and supply echelons will consult applicable Combat Supply Tables XIIA, XIIB, and XIII.

7–7. EXPLANATION OF SYMBOLS USED.

7–8. CROSS-HATCH SYMBOL (COLUMN TWO). Cross-hatch symbols (#) appearing in column two indicate that corresponding parts are not included in any concurrently procured spare parts group. However, many of the parts so marked may be obtained from stocks left over from Radio Set SCR-578-A or SCR-578-B.

7–9. Parts for the AN/CRT-3A are identical to those for the AN/CRT-3 except those items preceded by asterisks.

* denotes applicability to AN/CRT-3 only.
** denotes applicability to AN/CRT-3A only.

7–10. Contractor's part numbers are preceded by letters designating the manufacturer as follows:

BP–Bendix Pacific
KP–Kingston Products Corporation
GE–General Electric

TABLE III. TABLE OF REPLACEABLE PARTS

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Chassis and Panel Assembly

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
101-199 Series	#	CHASSIS AND PANEL ASSEMBLY: Consists of chassis, front panel, and all operating parts of transmitter proper.		BP-450216
C-101	# 3330-315242410 N16-C-32193-2480 3DKA3-49	CAPACITOR, Fixed: mica; 3000 uuf ± 5%; 500 vdcw; 53/64-in. max lg x 53/64-in. max wide x 9/32-in. max thick; (molded bakelite case; 2 wire leads 1-1/8 in. min lg). JAN Spec JAN-C-5.	Audio osc tuning	JAN type CM30A302J KP-23459
C-102	#	Same as C-101.	Audio osc plate blocking	
C-103	# 3330-31476400 N16-C-31512-4559 3DA1.500-3	CAPACITOR, Fixed: mica; 1500 uuf ± 10%; 500 vdcw; 53/64-in. max lg x 53/64-in. max wide x 9/32-in. max thick; (molded bakelite case; 2 wire leads 1-1/8 in. min lg). JAN Spec JAN-C-5.	Audio osc feedback	JAN type CM30A152K KP-22558
C-104	#	Same as C-101.	Audio interstage coupling	
C-105	# 3330-314940620 N16-C-31095-6639 3DKA1-108	CAPACITOR, Fixed: mica; 1000 uuf ± 20%; 500 vdcw; 53/64-in. max lg x 53/64-in. max wide x 9/32-in. max thick; (molded bakelite case; 2 wire leads 1-1/8 in. min lg). JAN Spec JAN-C-5.	Audio amplifier to r-f osc coupling	JAN type CM30A102M KP-22557
C-106	# 3330-376034200 N16-C-30114-4271	CAPACITOR, Fixed: mica; 470 uuf ± 10%; 500 vdcw; 51/64-in. max lg x 15/32-in. max wide x 7/32-in. max thick; (molded bakelite case; 2 wire leads 1-1/8 in. min lg). JAN Spec JAN-C-5.	R-F grid blocking	JAN type CM20A471K KP-23460
C-107	# 3330-376145118 N16-C-32193-2538	CAPACITOR, Fixed: mica; 3000 uuf ± 5%; 500 vdcw; 53/64-in. max lg x 53/64-in. max wide x 11/32-in. max thick; (molded bakelite case; 2 wire leads 1-1/8 in. min lg). Part of Z-101; cannot be replaced independently. JAN Spec JAN-C-5.	R-F osc grid coil tuning	JAN type CM35D302J KP-22561
C-108	# 3330-376149220 N16-C-32430-6138	CAPACITOR, Fixed: mica; 3900 uuf ± 5%; 500 vdcw; 53/64-in. max lg x 53/64-in. max wide x 11/32-in. max thick; (molded bakelite case; 2 wire leads 1-1/8 in. min lg). Part of Z-101; cannot be replaced independently. JAN Spec JAN-C-5.	R-F osc grid coil tuning	JAN type CM35D392J KP-22563
C-109	#	Same as C-108.	R-F osc grid coil tuning	
C-110	# 3330-376022800 N16-C-29660-9001 3K2030132	CAPACITOR, Fixed: mica; 300 uuf ± 5%; 500 vdcw; 51/64-in. max lg x 15/32-in. max wide x 7/32-in. max thick; (molded bakelite case; 2 wire leads 1-1/8 in. min lg). JAN Spec JAN-C-5.	R-F osc cathode bypass	JAN type CM20C301J KP-23322

TABLE III. TABLE OF REPLACEABLE PARTS (CONT)

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Chassis and Panel Assembly

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
C-111	3330-376192800 N16-C-31091-6114 3K4510221	CAPACITOR, Fixed: mica; 1000 uuf ± 10%; 2500 vdcw; 1-5/8 in. ± 1/64-in. lg x 1-1/8 in. ± 1/64-in. wide x 23/64-in. max thick; (molded bakelite case; 2 insulated solder lug term on ends with 1-3/4 in. ± 1/32-in. centers; 2 mtg feet with 0.144 in. dia holes on 1.314 in. centers). JAN Spec JAN-C-5.	R-F osc screen bypass	JAN type CM45B102K KP-23279
C-112		Same as C-111.	R-F osc plate supply bypass	
C-113		Same as C-111.	R-F plate blocking	
C-114	3330-376201600 N16-C-28976-3636 3K4515122	CAPACITOR, Fixed: mica; 150 uuf ± 5%; 2500 vdcw; 1-5/8 in. ± 1/64-in. lg x 1-1/8 in. ± 1/64-in. wide x 23/64-in. max thick; (molded bakelite case; 2 insulated solder lug term.on ends with 1-3/4 in. ± 1/32-in. centers; 2 mtg feet with 0.144 in. dia holes on 1.314 in. centers). JAN Spec JAN-C-5.	Antenna fixed tuning for 500 kc	JAN type CM45B151J KP-23280
C-115	3330-313643800 N16-C-60186-1462 3D9073VE2	CAPACITOR, Variable: air; 6.0 to 73.2 uuf; 0.020 in. max air gap; 1-1/8 in. lg x 31/32-in.wide x 1-7/32 in. high; (25 plates; ceramic insulation; 2 mtg holes tapped No. 4-40 on 21/32-in. mtg centered).	Antenna variable for 500 kc	BP-450235 KP-23323
C-116	3330-313410900 N16-C-59564-5960 3D9043VE7	CAPACITOR, Variable: air; 4.5 to 43.7 uuf; 0.020 in. max air gap; 1-3/16 in. lg x 31/32-in. wide x 1-7/32 in. high; (15 plates; ceramic insulation; 2 mtg holes tapped No. 4-40 on 21/32-in. mtg centered).	Antenna variable for 8364 kc	BP-450234 KP-23282
E-101	8870-938000-375 N17-L-6297 2Z5952	LAMP, Incandescent: Signal Corps Lamp LM-52, Navy Lamp TB-14; 6 to 8 V, 0.15 amp; T-3-1/4 clear; 1-3/16 in. lg OA; miniature bayonet base; (C-2 filament; burns any position).	R-F indicator	G E Part No. 47
E-102	8880-500164-9655 N17-B-77484-2471 2Z9401.95	BOARD, Terminal: 1 solder lug term.;phenolic; 1-15/32 in. lg x 1-1/4 in. wide x 1/8-in. thick OA, (one 0.152 in. mtg hole).	Term.point for C-105	BP-450228 KP-23286
E-103	8880-500467-1455 N17-B-77634-4385 2Z9404.208	BOARD, Terminal: 4 solder lug term.;phenolic; 1-11/32 in. lg x 13/16- in. wide x 9/16-in. thick OA; (one 0.152 in. mtg hole).	Mtg for C-101 and C-102	BP-450230 KP-23277
E-104	8880-501067-1555 N17-B-77835-2531 2Z9410.113	BOARD, Terminal: 10 solder lug term.;phenolic; 1-3/4 in. lg x 1-11/32 in. wide x 9/16-in. thick OA; (two 0.152 in. mtg holes on 1-1/8 in. centers).	Mtg for C-103, C-104, R-102 and R-107	BP-450225 KP-23380

TABLE III. TABLE OF REPLACEABLE PARTS (CONT)

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Chassis and Panel Assembly

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
E-105	# N17-C-80417-4245	CONTACT, Push-button: 1-3/16 in. lg x 1 in. dia; (2 insulated inserts used both as term.and push-button contacts; 1 insert mounted in center, other mounted 9/32-in. from center; insulating material black phenolic; body threaded No. 1-20).	Contacts for push-button key	BP-450217 KP-22782
E-106	# 3360-286415037 N17-C-80397-9307 2Z1480.32	BUTTON, Push: brass; silver-plated; 3/8-in. lg x 21/32-in. dia.	Plunger of push-button key	BP-15254 KP-22787
E-107	3320-292293320 N16-K-700075-441 2Z5850-69	KNOB, Bar: molded black phenolic; for 1/4-in. shaft dia; single No. 8-32 set-screw; groove on pointer end filled with white and painted with radioactive paint; 1-1/4 in. x 3/4-in. x 11/16-in.; (brass insert; shaft hole 7/16-in. dia coated with fungicidal lacquer).	Selector sw knob	BP-450211 KP-23325
E-108	3320-333006798 N17-I-59611-5101 3G1837-45.2	INSULATOR, Feedthru: round threaded tube with lug in one end; brown bakelite; 1-13/32 in. lg OA; (0.139 in. ID Tapering to 0.129 in. ID); 7/16-20 threads for 3/8-in. at center.	Antenna lead-in insulator	BP-450218 KP-22796
H-101	# 5300-680140 N17-C-813759-101	CLAMP, Receptacle: phosphor bronze; cadmium-plated; two 0.141 in. dia holes for rivet on 1 in. mtg centered; 1-3/32 in. x 1-5/16 in. x 25/32-in. OA.	Holds J-201	BP-15025 KP-22534
*H-102	# N17-C-813772-552	CLAMP, Crystal: spring bronze; cadmium-plated; one 0.152 in. dia insulated mtg hole; 1-5/16 in. lg x 3/8-in. wide with 15/32-in. mtg leg at one end and 21/32-in. clamp leg at other end.	Holds crystal in place	BP-450162 KP-23657
**H-102-1		CLAMP ASSEMBLY, Crystal: ceramic socket, 3-13 uuf variable capacitor, phosphor bronze clamp, 2 bakelite wafers, wiring and two 1/8-in. male contact pins 5/8-in. lg 0.486 in. center to center; 1-15/16 in. x 1-3/8 in. x 1-1/2 in. OA, replaceable unit, socket to accomodate crystal unit CR-18/U.	Holds crystal in place	KP-23820
H-103	# N17-C-782618-151	CLAMP ASSEMBLY: phosphor bronze clamp with copper wire attached; clamp cadmium-plated; clamp 1-7/16 in. lg x 1/2-in. wide x 3/16-in. thick OA, wire reaches 2-1/4 in. beyond end of clamp; (designed to hold wire 0.040 in. dia).	Antenna lead-in	BP-450324 KP-23711
H-104	# N17-S-46651-1017 2Z5042-16	SPRINGS, Shaft packing: coil; 0.055 in. dia music wire; cadmium-plated; 11/16-in. lg x 7/16-in. dia.	Holds washer and gaskets in place on sw shaft	BP-15343 KP-22901

TABLE III. TABLE OF REPLACEABLE PARTS (CONT)

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Chassis and Panel Assembly

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
H-105	# N17-S-46651-1030 2Z8876.37	SPRING, Push-button: 0.031 in. dia music wire; silver-plated; 1-15/32 in. lg x 5/8-in. OD; (8 coils tapering from 5/8-in. OD to 27/64-in. ID; 7 active coils; coil length 3/4-in. straight end from large end of coil extends 23/32-in.).	Keeps push-button contact open	BP-15253 KP-22786
H-106	# N17-S-46651-1028 2Z7780-9	SPRING, Tube retainer: 0.051 in. dia music wire, cadmium-plated; 1 in. dia x 1 in. lg OA; (one end of coil 29/32-in. ID, other end 9/16-in. ID).	Holds tube in socket	BP-4640 KP-22536
H-107	# N43-B-99500-111 6L20924-13-81CS	SCREW, Machine: hex head; steel, cadmium-plated; 1/4-20; 13/16-in. lg OA; head 7/16-in. across flats, 3/16-in. thick; (shoulder 1/64-in. lg; 0.114 in. dia hole drilled 11/32-in. dia through head of screw and tapped No. 6-32 1/4-in. dia).	Ground term.	BP-15998 KP-23076
H-108	# 3340-062450800 N43-W-3041-1625	WASHER, Flat: brass, cadmium-plated; 9/32-in. ID x 0.495 in. OD x 1/32-in. thick.	Retains gaskets on selector sw shaft	BP-15286 KP-22887
H-109	# 1600-651878050 N43-N-99500-171 6LK3510-24.1	NUT, Hexagon: die cast Zamak No. 5; 5/8-24; 1/8-in. thick; 1 in. wide across flats.	Secures J-101	BP-4698 KP-22531
J-101	# 3300-294769110 N17-C-73126-5249 2ZK7412-18	CONNECTOR, Female contact: 2 round female contact; straight; 13/16-in.lg x 7/8-in. dia OA designed for 28 V, 170 ma; cylindrical bakelite body with extended rim: cadmium-plated brass inserts with solder lug term.at rear; body thread 5/8-24; (body lettered SIGNAL LAMP SOCKET).	Jack for signal light plug	BP-450213 KP-22506
J-102	7700-525210 N17-L-51629-7118 2Z5883-250	LAMP HOLDER ASSEMBLY: Miniature bayonet; steel shell and bracket; 1-11/16 in. x 1-1/4 in. x 1-3/16 in. OA; (designed for 6-8 V, 0.15 amp; one 0.144 in. dia hole, and one 0.114 in. dia hole threaded No. 6-32; solder lug at base of shell).	Holds E-101	BP-450237 KP-23266
K-101	3380-501760-5575 N17-R-64840-7001 2Z7588-93	RELAY, General purpose: DPDT; 1-3/4 in. x 1-7/16 in. x 1-1/8 in. OA; (3/32-in. dia contact; contact designed for 330 V, 4 ma dc, or for 2-1/2 w r-f; multiple wound coil, 14Vdc, 0.056 amp, 250 ohms; fast acting; coil varnish impregnated and tropicalized; all phenolic parts tropicalized; single mtg stud threaded No. 6-32).		BP-450236 KP-23283
K-101-A	#	Part of K-101.	Selection of r-f osc grid circuit	

TABLE III. TABLE OF REPLACEABLE PARTS (CONT)

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Chassis and Panel Assembly

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
K-101-B	#	Part of K-101.	Supplying of high-voltage to audio section for 500 kc operation	
K-102		Same as K-101.		
K-102-A	#	Part of K-102.	Selection of plate tank circuit	
K-102-B	#	Part of K-102.	Antenna transfer	
L-101	# 3340-308914240 3CK2604-500	COIL ASSEMBLY, R-F: osc; integral type; 2 pie; shielded only by chassis; 2-5/16 in. lg x 1-3/8 in. wide x 2 in. high OA; (black plastic solid form; 0.375 in. dia x 1-1/8 in. lg with rectangular base 2-5/16 in. lg x 1-3/8 in. wide; adjusted at assembly by changing relative position of pies, adjusted at final assembly by adjusting iron screw in center of form; two 0.151 in. dia mtg holes on 2 in. centers in base; 4 solder lug term.on base; coil varnished and baked). Part of Z-101; cannot be replaced independently.	500 kc osc grid coil	Shown on BP Dwg No. 450360
L-102	3340-310005477 N17-C-74615-7806 3C323-150C	COIL, R-F: choke; integral type; single pie; unshielded; 2.35 uh; 19/32-in. lg x 1-1/8 in. dia excluding terminal; (ceramic core; core 1/2-in. dia x 7/16-in. lg; 3/16-in. dia axial mtg hole; 2 solder lug term.on bottom; varnish impregnated and baked in).	R-F osc cathode choke	BP-450363 KP-23461
L-103	3340-307520682 N16-C-74754-9361 3C307-68	COIL, R-F: integral type; five pie; unshielded; 2.5 uh; 1-7/16 in. lg x 17/32-in. max dia excluding leads; (ceramic core; core 7/16-in. dia x 1-7/16 in. lg; two 1-15/32 in. leads serve both for term.and for mtg; varnish impregnated and baked; coated with fungicidal lacquer).	R-F osc plate choke	BP-450090 KP-23318

TABLE III. TABLE OF REPLACEABLE PARTS (CONT)

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Chassis and Panel Assembly

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
L-104	3340-310005476 N16-C-72666-1571 3C323-150B	COIL ASSEMBLY, R-F: integral type; 3 windings, one single pie universal wound, other two single layer wound; 47, 2, and 5 turns respectively; 2 in. lg x 1-13/16 in. dia OA; (bakelite form, air core; form 1-3/4 in. x 1-5/16 in. OD; mtg base in end with two 0.152 in. holes on 5/8-in. mtg centered; 4 lug term.;form and base coated with fungicidal lacquer).		BP-450092 KP-23316
L-104-A	#	Part of L-104.	Plate tank coil for 500 kc	
L-104-B	#	Part of L-104.	R-F indicator coupling loop	
L-104-C	#	Part of L-104.	Neutralizing coil	
L-105	3340-310005475 N17-T-82061-5001 3C323-150A	COIL ASSEMBLY, R-F: integral type; 3 windings, all single layer wound; unshielded; 12, 3-1/2, and 1-1/4 turns respectively; 3 in. lg x 1-1/2 in.dia OA; (bakelite impregnated form, air core; form 2-11/16 in. lg x 1-5/16 in. OD: mtg base in end with two 0.152 in. holes on 5/8-in. mtg centered; 5 lug term ;form and base coated with fungicidal lacquer).		BP-450091 KP-23317
L-105-A	#	Part of L-105.	Plate tank for 8364 kc	
L-105-B	#	Part of L-105.	Antenna coupling coil	
L-105-C	#	Part of L-105.	R-F indicator coupling coil	
P-101	# 8850-554576 N17-C-73517-5483 2Z7227-2	CONNECTOR, Male contact: 6 flat parallel blades; straight; 1-11/32 in. x 1-3/16 in. x 1-1/16 in. OA; (5 amp, 45 V; molded bakelite body; two 0.149 in. dia mtg holes on 1 in. centers; laminated phenolic parts impregnated with bakelite and coated with fungicidal lacquer). Jones HB Part No. P-306AB.	Connects audio and r-f assembly to power supply and keying assembly	BP-450170 KP-22576
Q-101	# 1600-388450160 N17-C-945001-926 3ZK3618/D1	DIAPHRAGM, Push-button: neoprene; 59/64-in. dia x 1/4-in. thick, depression 1/2-in. dia x 7/32-in. deep; (washer thermo-welded to brim).	Water seal for push-button key	BP-4639 KP-22780

TABLE III. TABLE OF REPLACEABLE PARTS (CONT)

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Chassis and Panel Assembly

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
R-101	# 3350-099000-2751 N16-R-49922-710 3RC20AF102K	RESISTOR, Fixed: composition; 1000 ohms ± 10%; 1/2-w; 0.468 in. max lg x 0.249 in. max dia; (bakelite insulation; 2 axial wire leads 1-1/2 in. lg). JAN Spec JAN-R-11.	Cathode bias for V-101	JAN type RC20AF102K
R-102	# 3350-099000-4991 N16-R-50480-692 3RC20AF473K	RESISTOR, Fixed: composition; 47,000 ohms ± 10%; 1/2-w; 0.468 in. max lg x 0.249 in. max dia; (bakelite insulation; 2 axial wire leads 1-1/2 in. lg). JAN Spec JAN-R-11.	Audio osc plate load	JAN type RC20AF473K KP-23465
R-103	#	Same as R-102	Audio amplifier grid leak	
R-104	3350-099000-5831 N16-R-50633-781 3RC20AF104K	RESISTOR, Fixed: composition; 100,000 ohms ± 10%; 1/2-w; 0.468 in. max lg x 0.249 in. max dia; (bakelite insulation; 2 axial wire leads 1-1/2 in. lg). JAN Spec JAN-R-11.	Audio amplifier plate load	JAN type RC20AF104K KP-22565
R-105	# 3350-129000-5374 N16-R-50417-811 3RC30AF333K	RESISTOR, Fixed: composition; 33,000 ohms ± 10%; 1/4-w; 0.406 in. max lg x 0.170 in. max dia; (bakelite insulation; 2 axial wire leads 1-1/2 in. lg). JAN Spec JAN-R-11.	R-F osc grid leak	JAN type RC30AF333K KP-23463
R-106	# 3350-087000-4671 N16-R-50399-461 3Z-4557	RESISTOR, Fixed: composition; 27,000 ohms ± 10%; 1/4-w; 0.406 in. max lg x 0.170 in. max dia; (bakelite insulation; 2 axial wire leads 1-1/2 in. lg). JAN Spec JAN-R-11.	Isolates audio amplifier from r-f osc	JAN type RC10AF273K KP-22462
R-107		Same as R-105.	R-F screen dropping	
S-101	# 3360-395499303 N17-S-59290-8561 3Z9825-62.220	SWITCH, Rotary: 2 wipers, 3 position; 2 sections; bakelite body; 1-7/8 in. x 1-7/8 in. x 1-1/2 in.; (designed for 28V operation; two No. 5-40 screws project from wafer on 1-9/16 in. mtg centered; shaft 1/4-in. dia; 8 solder lug term.;all bakelite parts varnish impregnated and coated with fungicidal lacquer).	Selects type of operation	BP-450233 KP-23379
S-102	#	This reference symbol is used on the schematic diagram to refer to the function performed by E-105 and E-106.	Manual telegraph key	
T-101	# 3340-296825530 N17-T-63384-6601 2ZK9590-4	TRANSFORMER, A-F: audio osc; primary 78MH ± 15% at 0.825V rms, secondary 3.2 H ± 15% at 5.2 V rms, inductances to be measured at 1000 cps; open steel frame; 2 in. lg x 1 in. wide x 1-1/8 in.high OA: (turns ratio of primary to secondary 1:6.3; designed to operate only at fixed freq of 1000 cps; 4 solder lug term.at top; two 5/32-in. dia mtg holes on 1-5/8 in. centers; covered with fungicidal lacquer).	Audio osc transf	BP-450398 KP-22743

TABLE III. TABLE OF REPLACEABLE PARTS (CONT)

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Chassis and Panel Assembly

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
V-101	# 3370-316000-1445 N16-T-58307 2J12SC7	TUBE, Electron: Signal Corps Tube VT-268; (double triode). JAN Spec JAN-1A.	Audio osc and amplifier	JAN type JAN-12SC7
V-102	# 3370-286000-1325 N16-T-58228 2J12A6	TUBE, Electron: Signal Corps Tube VT-134; (beam power) JAN Spec JAN-1A.	R-F osc	JAN type JAN-12A6
X-101	# N16-S-63051-1015	SOCKET, Tube: standard octal; low-loss mica filled bakelite; 1-7/8 in. lg x 1-3/16 in. wide x 13/16-in. high OA; (two 0.136 in. dia mtg holes on 1-1/2 in. centers; coated with fungicidal lacquer).	Tube mtg	BP-450168 KP-23332
X-102	8850-867145 N16-S-54255-8990 2Z8672.73	SOCKET, Crystal: 2-prong wafer; bakelite; 1-1/2 in. lg x 3/4-in. wide x 5/8-in. high; (two 0.144 in. dia mtg holes on 1-3/16 in. mtg centered).	Mtg for crystal	BP-450231 KP-23378
*Y-101	N16-C-97285-4101 2X4-8280	CRYSTAL UNIT, Quartz: Army-Navy Crystal Unit CR-1A/AR; freq 8280 kc; molded bakelite holder; 1-1/8 in. wide x 1-13/16 in. high x 7/16-in. thick; transmitting; (two 5/8-in. lg x 1/8-in. dia pin term. spaced 1/2-in. center to center); government furnished.	Determines freq of 8280 kc osc	KP-23285
**Y-101-1		CRYSTAL UNIT, Quartz: freq 8364 kc; metal holder: type CR-18/U, MIL Spec C-3098, 11/16-in. wide x 3/4-in. high x 5/16-in. thick, two term.pins 0.050 in. dia spaced 1/2-in. center to center 7/32-in. lg.	Determines freq of 8364 kc osc	KP-23805-A
Z-101	# 3340-308914240 N16-O-66002-9271 3CK2604-500	COIL ASSEMBLY, R-F: 2-15/16 in. lg x 1-3/8 in. wide x 2-1/8 in. high OA; (adjusted by means of iron screw in center of form; two 0.151 in. dia mtg holes on 2 in. centers in base; 4 solder lug term.on base; complete assembly varnished and baked). Includes C-107, C-108, C-109 and L-101.	500 kc osc grid tank	BP-450360 KP-22837

TABLE III. TABLE OF REPLACEABLE PARTS (CONT)

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Power Supply and Keying Assembly

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
201-299 Series	#	POWER SUPPLY AND KEYING ASSEMBLY: includes gen, gen drive, voltage regulator components, keyer assembly, and related parts.		BP-450186
C-201	5910-544-7251 N16-C-19543-6776 3DB8-66	CAPACITOR, Fixed: dry electrolytic; 8uf; 450 vdcw; 1-11/16 in. lg x 13/16-in. dia; (aluminum can enclosed in cardboard case treated with approved fungus resistant wax or fungicidal varnish; 2 tinned copper wire leads 2-1/2 in. lg). Part of E-204. Signal Corps Spec 71-1116.	High-voltage filter	BP-450391 KP-22560
E-201	# 8870-938000-825 N17-L-6505-625 2Z5949	LAMP, Incandescent: Signal Corps Lamp LM-49; 28 V 0.1 amp; T-3-1/4 clear; 1-3/16 in. lg OA; miniature bayonet base; (C-2 filament; burn any position). BP Spec BX 19-4.	Gen speed indicator	KP-22801
E-202	#	Same as E-201.	Gen speed indicator	
E-203-A/B	3360-387451335 N17-C-84091-1080 3Z1716-6	CONTACT ASSEMBLY, DPST: 2 steel fingers and 2 mating contact strips assembled with spacers, screws, nuts, and washers; 1/8-in. dia silver contacts on both steel fingers and contact strips; adjustable screw stops; 2-1/8 in. x 13/16-in. x 3/4-in. OA; (4 solder lug term. at end). Part of O-202.		BP-450239 KP-23356
E-203-A	#	Part of E-203-A/B.	Automatic r-f osc keying	
E-203-B	#	Part of E-203-A/B.	Automatic freq changing	
E-203-C	# N16-C-125001-259	CAM, Code: die-cast zinc; 3 in. dia x 5/16-in. high; (one-half of rim coded with 6 SOS sequences, other half coded with single long dash; 0.187 in. dia mtg hole in center; two 0.187 in. alignment holes in long dash half). Part of O-202.	Automatic keying	BP-450179 KP-23351

TABLE III. TABLE OF REPLACEABLE PARTS (CONT)

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Power Supply and Keying Assembly

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
E-203-D	# N16-C-125001-297	CAM, Freq-changing: die-cast zinc; half wheel 3 in. dia x 3/16-in. high; (0.500 in. dia mtg hole in center; two 0.187 in. alignment holes corresponding in position to similar holes in E-203-C). Part of O-202.	Automatic freq changing	BP-450180 KP-23352
E-204	8880-500521-7355 N17-B-77686-8312 2Z9405.121	BOARD ASSEMBLY, Term.:5 solder lug term., 1 capacitor, 1 relay, 1 resistor; phenolic board 2-5/16 in. x 2-1/4 in. x 3/32-in. thick attached by 2 rivets in 0.140 in. dia holes to aluminum alloy bracket 3-5/16 in. lg x 1-9/16 in. wide x 0.064 in. thick bent to form 60° angle with phenolic board; (two 0.177 in. dia mtg holes on 1-3/8 in. centers in edge of bracket to mount assembly to gen). Includes C-201, K-201, and R-201.	Filtering and voltage regulation	BP-450386 KP-23314
E-205	# 1600-337828000 N17-B-86641-8347 3H1528.2/B7	BRUSH, Electrical contact: pos low-voltage; brush material MC grade carbon; brush 0.262 in. x 0.189 in. x 7/16-in. lg;spring 1 in. x 3/8-in. dia; (stamped "+" on one side of brush; U-shaped type-A cap). Part of G-201.	Gen brush	BP-406242 KP-22908
E-206	# 1600-337828000 N17-B-88403-5891 3H1528.2/B7	BRUSH, Electrical contact: neg low-voltage; brush material MC grade carbon; brush 0.262 in. x 0.189 in. x 7/16-in. lg. spring 1 in. x 3/8-in. dia; (stamped "–" on one side of brush; U-shaped type-A cap). Part of G-201.	Gen brush	BP-406243 KP-22907
E-207	# 1600-337825000 N17-B-88403-2286 3H1528.2/B6	BRUSH, Electrical contact: pos high-voltage; brush material CMC grade carbon; brush 0.278 in. x 0.091 in. x 7/16-in. lg; spring 1 in. x 5/8-in. dia; (stamped "+" on one side of brush; U-shaped type-A cap). Part of G-201.	Gen brush	BP-406244 KP-22906
E-208	# 1600-337825000 N17-B-88403-2286 3H1528.2/B6	BRUSH, Electrical contact: neg high-voltage; brush material CMC grade carbon; brush 0.278 in. x 0.091 in. x 7/16-in. lg; spring 1 in. x 5/8-in. dia; (stamped "–" on one side of brush; U-shaped type-A cap). Part of G-201.	Gen brush	BP-406245 KP-22905
E-209	# 3H135-7	ARMATURE ASSEMBLY, Gen: 300 V and 28 V windings; 5 in. lg x 1.625 in. dia; (two 7/32-in. ID bearings; shaft threaded in longer end for No. 6-40 screw; 2 commutators, one for low-voltage, one for high-voltage. Includes O-205. Part of G-201.	Rotating part of gen	BP-4757

TABLE III. TABLE OF REPLACEABLE PARTS (CONT)

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Power Supply and Keying Assembly

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
E-210	#	WINDING ASSEMBLY, Gen field: consists of yoke, windings, and pole pieces; 28 V dc; 2-3/4 in. OD x 2-1/2 in. lg; (two leads from center hole; two leads from one end, both terminating in same solder lug).	Gen field	BP-405605
G-201	1600-337816000 N17-G-59751-7379 3H1528.2	GENERATOR, D-C: 17 w 300 V and 28 V, 5 wire; open frame; shaft 5 in. x 3/8-in. at widest point; 5-1/4 in. lg x 3-1/4 in. dia; (5000 rpm; manual drive; self-excited; fixed mtg base; 3 mtg holes for No. 8 screws equally spaced about 3 in. circle). Includes E-205 through E-210 and O-206. BP Model No. 3975-1.	High-voltage and low-voltage power supply	BP-2873 KP-22520
H-201	# 3340-296880108 N43-N-99500-224	NUT, Hexagon: brass; 1/2-27; 3/32-in. thick; 3/4-in. wide across flats.	Nut for O-202	BP-450209 KP-23355
J-201	# 8850-300240 N17-C-71224-1370 2Z8639-7	CONNECTOR, Female contact: 6 flat parallel contacts; straight; 1 in. x 11/16-in. x 1-3/8 in. OA; (5 amp 45 V; formed metal cap with black crystal finish; cable opening 3/8-in. dia; cable clamp attached; laminated phenolic parts impregnated with bakelite and coated with fungicidal lacquer). Jones HB Part No.S-306-CCT.	Connects power supply and keying assembly to audio and r-f section	BP-450169 KP-22575
J-202	7700-525220 N17-L-52201-1026 2Z5886-16	LAMPHOLDER ASSEMBLY: Assembly of 2 miniature bayonet lampholders on bracket; lampholders have steel shells; 1-5/8 in. x 1-3/16 in. x 15/16-in. including bracket; lampholder 3/8-in. ID; (one 0.144 in. dia mtg hole in end of bracket; 2 solder lugs, one at base of each lampholder).	Holds E-201 and E-202	BP-450238 KP-23377
K-201	# N17-R-64933-4168	RELAY, General purpose: SPDT; 1-3/4 in. x 1-5/8 in. x 7/8-in.; (1/8-in. silver contacts; contact rating 200 w; multiple wound coil, rated 32 V dc at 0.032 amp, 1000 ohms; fast acting; coil varnish impregnated and coated with fungicidal lacquer; all bakelite parts coated with fungicidal lacquer; No. 6-32 stud and extruded boss on 7/16-in. mtg center). Part of E-204.	Voltage regulation	BP-450387 KP-22663
O-201	# N17-G-43868-8021	DRIVE, Gen: assembly of 4 gears completely enclosed in gear case divided into halves; gen drive operated from manual crank; 6-1/8 in. lg x 5-1/2 in. wide x 1-1/2 in. thick; mtd to cabinet by four No. 10-32 screws and collett nut fitting over bushing threaded 1-1/4-18; (main driving gear shaft located inside bushing; sq socket for manual crank in bushing end of shaft; slot-type socket for tongue of governor gear train assembly at opposite end of shaft).	Gen drive gear train	BP-450389 less part No. 2873 KP-23631

TABLE III. TABLE OF REPLACEABLE PARTS (CONT)

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Power Supply and Keying Assembly

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
O-202	1600-291619881 N16-K-47674-6626 2Z4875-89	KEYER ASSEMBLY: gear reduction unit with code cam and freq-changing cam attached; 6-1/4 in. x 2-15/16 in. x 1-3/4 in. OA; (3 mtg holes for No. 6 screw arranged irregularly; tongue on gear No. 1 fits slot-type socket in E-203). Includes E-203-A/B, E-203-C and E-203-D.	Automatic keying and automatic frequency changing	BP-450315 KP-23409
O-205	#	BEARING, Ball: single row radial, double shield; steel; 0.7480 in. OD x 0.1969 in. ID x 0.2362 in. wide OA. Part of E-209. ND Part No. 77035. BP Spec BX72-20.	Reduces gen arm shaft friction	
O-206	N17-C-200543-768 3H1528-7/C1	CAP, Contact brush: black molded bakelite; 9/16-in. dia x 5/16-in. high; (bore 0.344 in. dia x 11/64-in. deep, tapped 3/8-32 NS-3; straight fine knurl; 5/16-in. x 1/16-in groove in top for screw driver). Part of G-201.	Holds brush in place	BP-4274 KP-23628
R-201	#	Same as R-101. Part of E-204.	Relay current limiting	KP-22567

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Miscellaneous Parts

301 -399 Series	#	MISCELLANEOUS PARTS OF RADIO TRANSMITTER: Consists of cabinet and all other parts of Radio Transmitter T-74/CRT-3 not in either chassis and panel assembly, or power supply and keying assembly.		
A-301	N16-C-10608-5501	CABINET, Radio transmitter: 0.064 in. aluminum alloy, except for fittings; empty; for transmitter, power supply, and automatic keying device; 10 in. high x 9-3/4 in. wide x 8 in. deep; 2 hinges for attaching belt; (felt-lined crank well in back; hole for crank bushing in top; painted orange-yellow; instruction lettering on top).	Waterproof housing	BP-450384 KP-23697
A-302	# N16-S-691001-102	STRAP, Leg: olive drab cotton webbing; 9-5/8 in. lg x 5 in. wide x 2 in. thick OA; (one end terminated with metal buckle 3-11/16 in. wide x 3-5/8 in. lg x 1-1/2 in. high OA; other end terminated with alluminum alloy painted hinge).	Buckle end of belt	BP-450380 KP-23749

TABLE III. TABLE OF REPLACEABLE PARTS (CONT)

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Miscellaneous Parts

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
A-303	# N16-S-691001-101	STRAP, Leg: olive drab cotton webbing; 44-3/8 in. lg x 5 in. wide x 1/4-in. thick OA; (one end terminated with aluminum alloy painted hinge; other end terminated with tongue overlapping 18-3/4 in. and extending 8-1/4 in. beyond end of main strap, end of which is stiffened by thermosetting plastic impregnation).	Tip end of belt	BP-450378 KP-23750
A-304	# 1600-287726006 N16-C-145959-101 2Z3352.93	CAP, Ground well: Zamak No. 5; 1-5/16 in. dia x 11/16-in. thick OA; (swivel in center of rear; marked TURN with accompanying arrow, GROUND, and THROW INTO WATER).	Cover for ground well	BP-4574 KP-22507 KP-23476
A-305	1600-22232 4000 N17-C-201113-551 2C6596-778A/C1	CAP, Crank socket: black tanite finished with fungicidal lacquer; cover 2 in. dia x 13/32-in. thick; (hole in under side of cap 1-3/16 in. dia x 7/32-in. deep, tapped 1-1/4-18 NS-2; marked TURN, with accompanying arrow, and CRANK SOCKET REMOVE in raised lettering; 6 finger grooves in rim).	Cover for crank socket	BP-450377 KP-22682
A-306	1600-286675131 N16-C-145476-101 2Z1607-21	CAP, Desiccator: die cast Zamak No. 5; dipped in caustic bath and Edonol Z, finished in clear lacquer; 1-3/16 in. dia x 15/32-in. deep, (9/32-in. threaded No. 1-20 NS-3; screwdriver slot in top 3/4-in. lg x 3/64-in. wide x 3/32-in. deep).	Cover for desiccator compartment	BP-4573 KP-22508
A-307	# 3300-635330000 N16-D-17174-6431 6Z477-1 filled with 6G250-2	DESICCANT ASSEMBLY, Silica gel: cotton bag containing crystals; 2-3/4 in. x 1 in. wide OA; (crystals change from blue to pinkish white upon absorbing moisture).	Dehydrating agent	BP-450489 KP-22885 KP-22503
E-301	# N16-A-49924-4221 (for spare see E-402)	ANTENNA, Kite or balloon supported: Army-Navy Antenna Assembly AS-207/CRT-3; cadmium copper alloy wire, Signal Corps Antenna Wire W-147, with addition of fastenings; 16 strands 306 ft lg x 0.040 in. max dia; 65 lb test; (cadmium-plated steel thimble on each end of antenna; one thimble attached to nylon cord 106 in. lg folded to give length of 43 in., with instruction tag attached to loop; other thimble attached to waterproof nylon cord 12 in. lg with swivel on end). Part of O-302.	R-F radiation	Shown on BP Dwg No 450320 KP-23301

TABLE III. TABLE OF REPLACEABLE PARTS (CONT)

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Miscellaneous Parts

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
H-301	# N17-G-150764-902	GASKET, Synthetic rubber; neoprene or Hycar: 9-3/4 in. lg x 9-1/8 in. wide x 1/8-in. thick OA; (16 holes 0.170 in. dia; holes located at 2 in. intervals around gasket).	Water seal between cabinet and panel	BP-450232 KP-22775
H-302	# 1600-222328000 N17-G-161446-179 2C6596-778A/G-3	GASKET, Vellumoid: 1-19/32 in. OD x 1-1/4 in. ID x 1/32-in. thick.	Crank bushing water seal	BP-4764 KP-22521
H-303	#	GASKET, Vellumoid: 7/16-in. OD x 13/64-in. ID x 1/32-in. thick.	Water seal for screw holding power supply and keying assembly	BP-451575
H-304	# 1600-222338000 N17-G-156375-543 2C6596-778A/G8	GASKET, Vellumoid: 6-1/4 in. lg x 5-9/16 in. wide x 1/32-in. thick OA; (four 0.213 in. dia holes arranged in trapezoid: 1-5/16 in. dia hole for crank bushing).	Gear housing water seal	BP-4739 KP-22658
H-305	# N17-G-161141-356	GASKET, Synthetic rubber: neoprene; 1 in. OD x 5/8-in. ID x 0.045 in. thick.	Water seal for windows	BP-450135 KP-23468
H-306	# N17-G-161243-538 2C6596-778A/G10	GASKET, Synthetic rubber: neoprene; 1-11/64 in. dia x 1/16-in. thick.	Crank cap water seal	BP-4765 KP-23019
H-307	N17-W-920001-171 2SK578/W1	WRENCH, Double end box: 6-5/8 in. lg x 2-1/2 in. wide x 0.064 in. thick; 2-1/16 in. dia opening one end, with flanges to fit crank cap; 1 in. dia opening other end, with flange to fit ground cap; 1-5/16 in. lg x 1/2-in. opening in side to fit brake wheel; (aluminum alloy; handle tapers from 2-1/2 in. at widest end).	Loosens crank cap, ground cap, and brake wheel	BP-15403 KP-23037
H-308	# 1600-652010090 N42-P-11673-250 6LK3919	PIN, Safety: music wire; cadmium-plated; 2-1/4 in. lg x 11/16-in. wide x 1/4-in. thick OA.	Holds crank in well	BP-4730 KP-22858
H-309	# N16-P-312501-113 6L3941-85C	PIN, Hinge: steel wire; cadmium-plated 5-5/16 in. lg x 3/8-in. wide x 0.080 in. thick OA; (7-1/4 in. lg x 0.080 in. dia wire bent at one end to form spring loop; heat treated under pressure per AN-QQ-H-201).	Fastens belt to cabinet	BP-15249 KP-23092
H-310	# 6L58050-2C	WASHER, Flat: steel, cadmium-plated; 1.260 in. ID x 1-5/8 in. OD x 0.020 in.thick.	Washer under H-313	BP-15977 KP-22531
H-311	#	Same as H-109.	Secures windows	
H-312	# 6L3768-32.10N	NUT, Cap: brass, nickel-plated; No. 8-32; 0.281 in. max high; 0.312 in. max across flats.	Holds panel to cabinet	BP-461599

TABLE III. TABLE OF REPLACEABLE PARTS (CONT)

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Miscellaneous Parts

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
H-313	# 8900-485350 N43-N-9633-4320 6L2800-18.3	NUT, Collett: cadmium-plated steel; 1-1/4 -18; 1/8-in. thick; 1-5/8 in. OD: (2 slots 3/32-in. deep x 3/16-in. wide on opposite end of center line).	Secures crank bushing	BP-4549 KP-22501
I-301	# 1600-328534050 N17-L-250197-649 3FK26100-1	WINDOW, Indicator: molded lucite; 1 in. dia x 1/2-in. lg OA; (body dia 5/8-in., 17/64-in. threaded 5/8-24; 3/8-in. dia hole in center of body 1/4-in. deep; rim projects 3/16-in. beyond body to hold window in cabinet).	Makes indicator light visible externally	BP-450210 KP-23333
O-301	# 1600-412609000 N16-C-920001-136 4B462A	CRANK, Gen: Signal Corps Hand Crank GC-18-A; assembly of steel L-shaped frame with black plastic rotating hand grip on shorter leg, ratchet, ratchet pawl, pawl spring, and hub screw; all metal parts cadmium-plated; (ratchet and ratchet pawl enclosed within arm permit application of force clockwise only; finger-operated hub screw locks projection on crank to socket in main driving gear shaft; cord attached to frame to fasten crank to cabinet).		BP-4506 KP-23321
O-302	N16-A-49924-4201	ANTENNA ASSEMBLY, Kite or balloon supported: circle door with Signal Corps Reel RL-48 attached, and Army-Navy Antenna Assembly AS-207/CRT-3 wound on reel; 4-3/8 in. dia x 2-1/4 in. deep OA; (pin-hinged door; cotter-pin bolt attached by chain; reel fixed to back of door by axial rivet; collapsible handle on reel; brake handle on front of door; raised lettering on front of door OPEN FOR ANTENNA, BRAKE, and LOCK OPEN with accompanying indicating arrows: hinge holes 0.149 in. dia; latch hole 0.141 in. dia; lock-open holes 0.136 in. dia). Includes E-301. Signal Corps Spec 271-1198.	Provides and mounts antenna	BP-450318 KP-23308
W-301	# 1600-222322500 N22-W-3550-20 2C6596-778A/A4	WIRE ASSEMBLY, Bare: 8 ft of Signal Corps Wire W-147 wound on reel and with lug on one end; cadmium-copper alloy wire; 0.040 in. max dia; 12 to 16 strands; (65 lb test; wire wound on H shape metal reel 2-1/4 in. lg x 3/4-in. wide x 1/32-in. thick OA).	Grounds transmitter	BP-4711 KP-23712

TABLE III. TABLE OF REPLACEABLE PARTS (CONT)

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Accessories

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
401-499 series	#	ACCESSORIES: Consist of Bag BG-155-A and all parts packed therein, with the exception of Radio Transmitter T-74/CRT-3.		BP-450490
A-401	# 1600-286162130 N16-B-110001-116 2Z551-155A	BAG, Radio set: Signal Corps Bag BG-155-A; canvas, yellow; 17 in. lg x 14-1/2 in. wide x 20-1/4 in. high; (lined with 3/8-in. thick hair felt; 1 webbing hand grip on each of four sides; permanently attached cover with 4 in. x 4 in. x 3-1/2 in. projecting compartment to accommodate kite and inflating tube bag; cover secured by lacing cord through metal eyelets; 2 metal loops projecting through cover for attaching parachute; supplied with cushioning strips, pads, and smaller bag for kite and inflating tubes. Includes A-402. Signal Corps Spec 71-5015; government furnished.	Contains all other components of radio set	KP-23020
A-402	# N16-B-110001-115 2A1680	BAG, Kite and inflating tube: pre-shrunk canvas, yellow; 23 in. lg x 5-1/4 in. wide; (draw string in top; warnings and lists of contents printed on outside). Part of A-401; government furnished.	Contains kite and inflating tube	KP-23751
A-403	# 1600-702544200 7AK1207-390A	PARACHUTE: Signal Corps Parachute M-390; yellow nylon; 12 ft dia; 40 lb cap; sixteen 1/4-in.flat white nylon webbing shrouds 11 ft lg; (yellow canvas bag; 300 to 500 ft safety altitude; 2 snap hooks provided on pack to engage loops on Bag BG-155-A; olive drab webbing rip cord terminating in snap hook; pack tropicalized); government furnished.	Checks velocity of descending radio set	
A-404	# 1600-203611500 2A1678-357A or 2Z1678-357A	KITE: Signal Corps Kite M-357-A; metal framework; packed, 18 in. lg x 4 in. dia OA; assembled, 17 in. x 17 in. x 36 in. OA; (instructions imprinted on fabrics; 4 kapok-filled pockets in fabric; 2 alternative bridling eyes for attaching antenna swivel clasp). Signal Corps Spec 271-1198; government furnished.	Raises and supports antenna	KP-23004
A-405	# 1600-696792900 6Z4315B	GENERATOR, Hydrogen: Signal Corps Hydrogen Generator M-315-B; steel cylinder and separate inflating tube; cylinder 3-3/4 in. dia x 11-5/8 in. lg OA; total generating time 30 min; (cylinder filled with calcium hydride; operated by immersion in water; key and tongue on each end for opening cylinder). Includes A-406; Signal Corps Spec No. 271-1198; government furnished.	Produces hydrogen to inflate balloon	KP-23708

TABLE III. TABLE OF REPLACEABLE PARTS (CONT)

Model: Radio Set AN/CRT-3 MAJOR ASSEMBLY: Accessories

Reference Symbol	Air Force Stock No. Navy Stock No. Signal Corps Stock No.	Nomenclature	Function	Mfr Part No. Dwg No. or Standard Type
A-406	# N16-N-600001-102	PIPE, Balloon inflating: aluminum, with fiber insulating grip; 1-3/16 in. dia x 19 in. lg OA; (assembly of tube, spiral strip running length tube, needle insert in end of tube and insulating grip; 3/8-in. of tube threaded; 1/16-in. dia vertical hole into top of needle, 1/4-in. dia horizontal hole through top of needle; tag fastened by cord to groove in bottom of insulating grip). Part of A-405; government furnished.	Carries hydrogen from generator to balloon	KP-23698
A-407	# 1600-203062995 2A299-278A	BALLOON, Neoprene: Signal Corps Balloon M-278-A; antenna lifting; gray deflated dia 6-3/4 in.; inflated dia 4 ft; neck 15/16-in. OD x 11/16-in. ID x 1-5/8 in. lg; (spherical; with 2 cord loops 3-3/4 in. lg for attaching antenna; rubber cork stopper tied to neck; packed in steel can 4-1/4 in. dia x 5-1/8 in. lg with key and tongue on one end). Signal Corps Spec 271-1198; government furnished.	Raises and supports antenna	KP-23709
A-408	# 1600-606905000 6B698B	LIGHT ASSEMBLY, Signal: Signal Corps Signal Lamp M-308-B; molded bakelite base, molded clear polystyrene shield, bulb, spare bulb, cord and plug, and olive drab cotton web strap; 24V 170 ma dc; 2-15/16 in. high x 2-3/16 in. dia with 95 in. lg cord, and 36 in. lg strap attached; designed to be strapped to top of head; packed in cardboard container 3 in. dia x 3-1/8 in. high). Includes A-409 and E-401. Signal Corps Spec 271-1198.	Visual signaling	BP-450493 KP-23382
A-409	# N17-L-250216-595	SHIELD, Lamp: molded clear polystyrene; 1-15/16 in. OD x 1-3/4 in. ID x 1-9/16 in. high; (1/4-in. of base threaded 2-1/16-14, class 2 fit). Part of A-408.	Protects signal lamp	BP-15805 KP-22985
E-401	# 8870-940000-925 N17-L-6543-0015 2Z5958A	LAMP, Incandescant: Signal Corps Lamp LM-58-A; 24V, 170 ma; bulb T-3 clear, 1-1/4 in. lg OA; miniature screw base; (C-2 V filament; burn any position). Part of A-408. BP Spec BX19-5.	Visual signal	KP-22767 GE No. 1477
E-402	1600-202152538 N16-A-49924-4226 2A264-207	ANTENNA ASSEMBLY, Spare: kite or balloon supported; spare Army-Navy Antenna Assembly AS-207/CRT-3, E-301, wound on phenolic spool 2-3/4 in. wide x 2-1/4 in. dia, with drum 1-13/16 in. wide x 3/4-in. dia.	Spare for E-301	BP-450491 KP-23315
	8135-NL-69625-299	Sleeve, Fiberboard: 4-5/16 in. wide x 11-5/8 in. lg x 1/4 in. thick.	Protector for hydrogren gen :am	

SECTION VIII

DRAWINGS

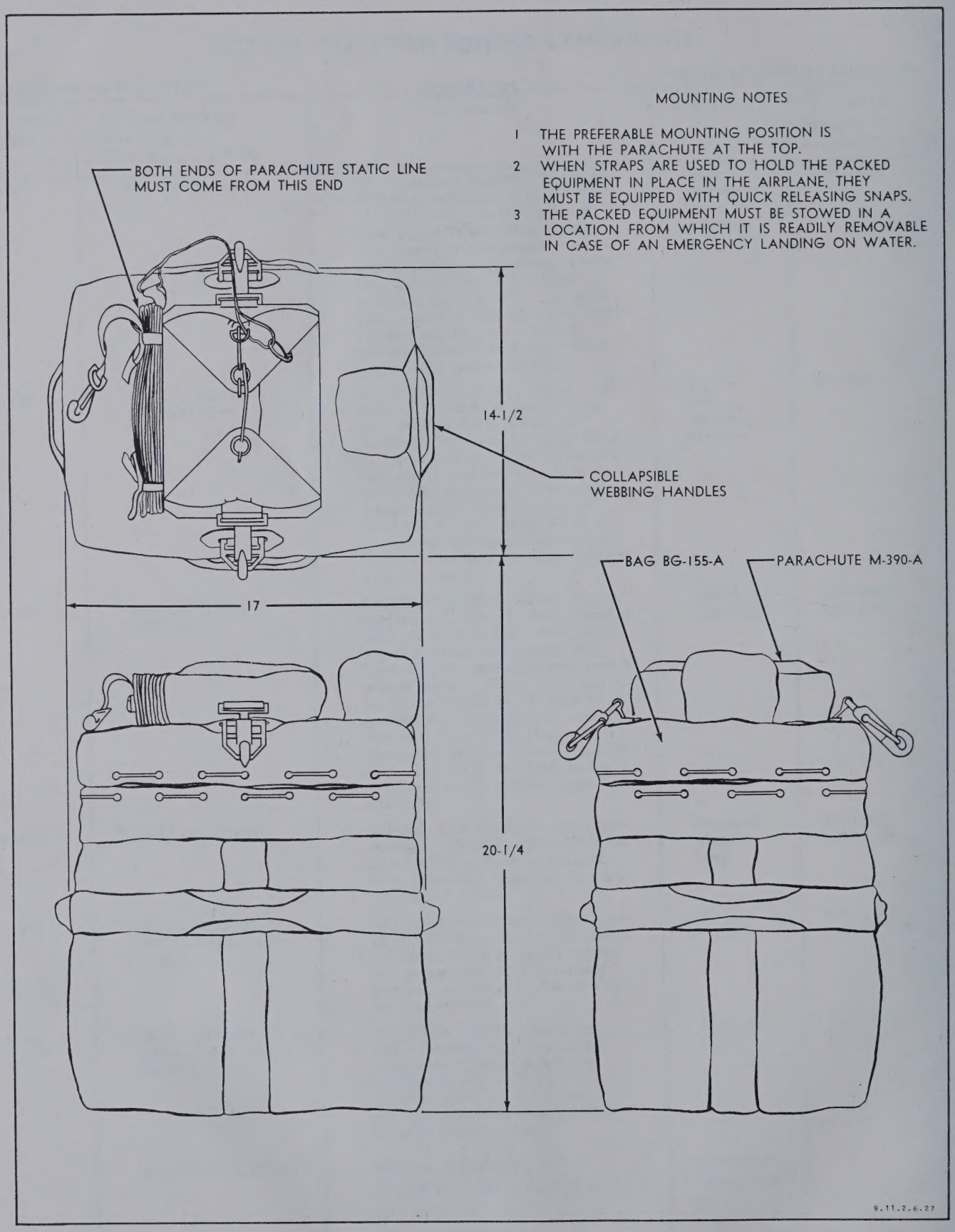


Figure 8–1. Radio Set AN/CRT-3 – Outline Dimensional Drawing

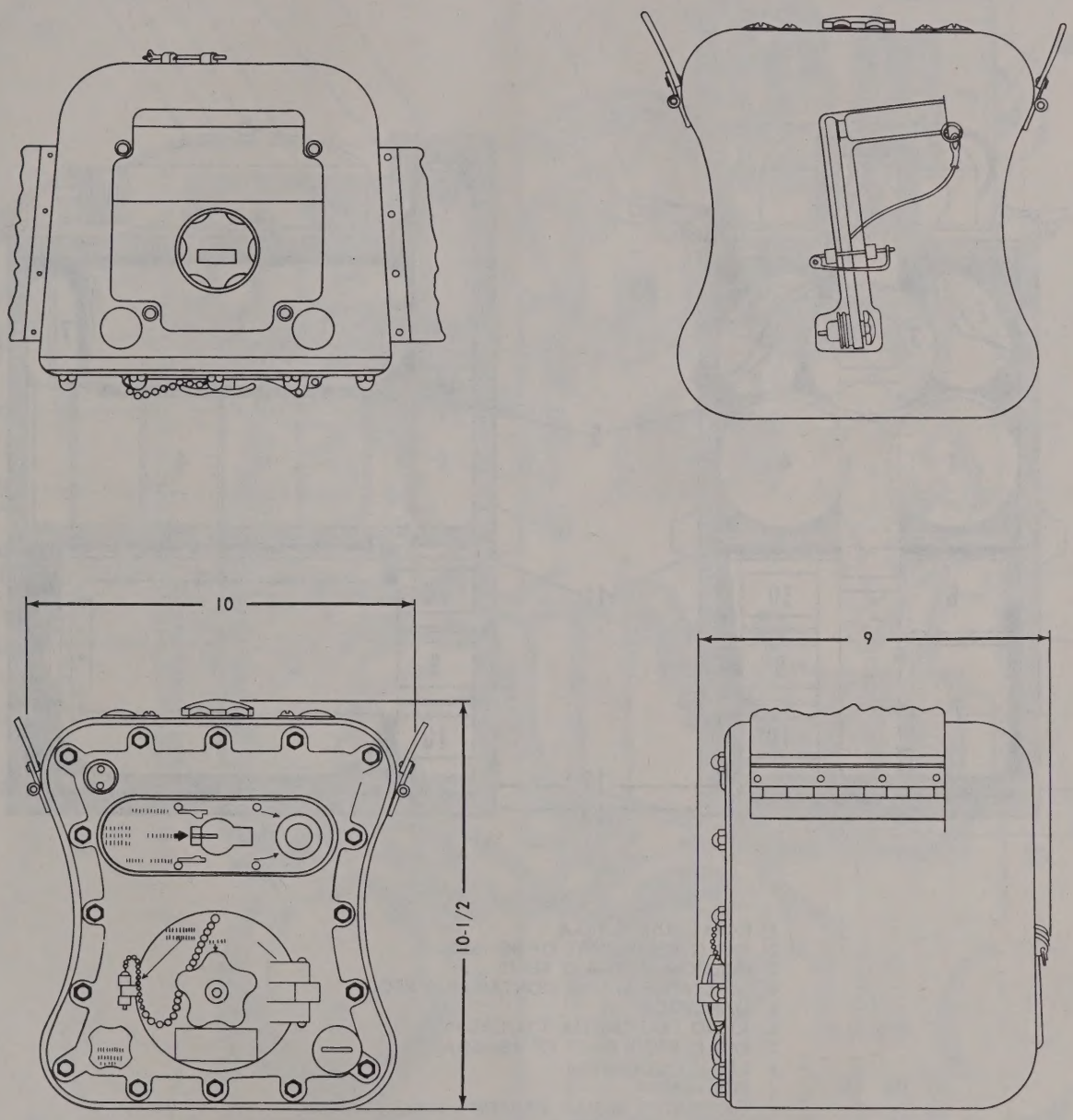
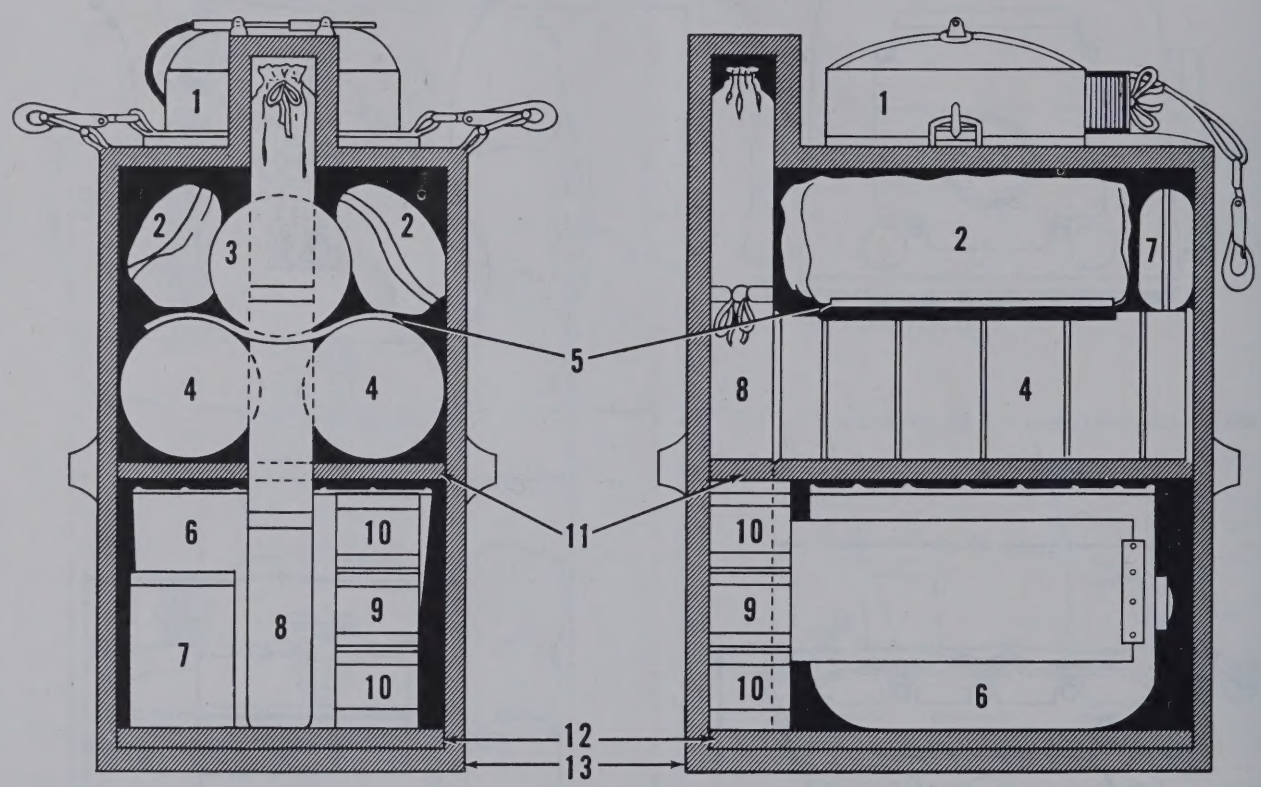


Figure 8–2. Radio Transmitter T-74/CRT-3 – Outline Dimensional Drawing



1 PARACHUTE M-390-A
2 PAD (2 REQD) (PART OF BG-155-A)
3 BALLOON M-278-A (2 REQD)
4 GENERATOR M-315-B CONTAINER (2 REQD)
5 HANDBOOK
6 RADIO TRANSMITTER T-74/CRT-3
7 PAD (2 REQD) (PART OF BG-155-A)
8 BAG CONTAINING:
KITE M-357-A
GENERATOR M-315-B INFLATING TUBES (2 REQD)
9 SIGNAL LAMP M-308-B
10 ANTENNA ASSEMBLY AS-207/CRT-3 (2 REQD)
11 PAD (PART OF BG-155-A)
12 PAD (PART OF BG-155-A)
13 BAG BG-155-A

9.11.2-6.29

Figure 8–3. Radio Set AN/CRT-3 – Packing Diagram

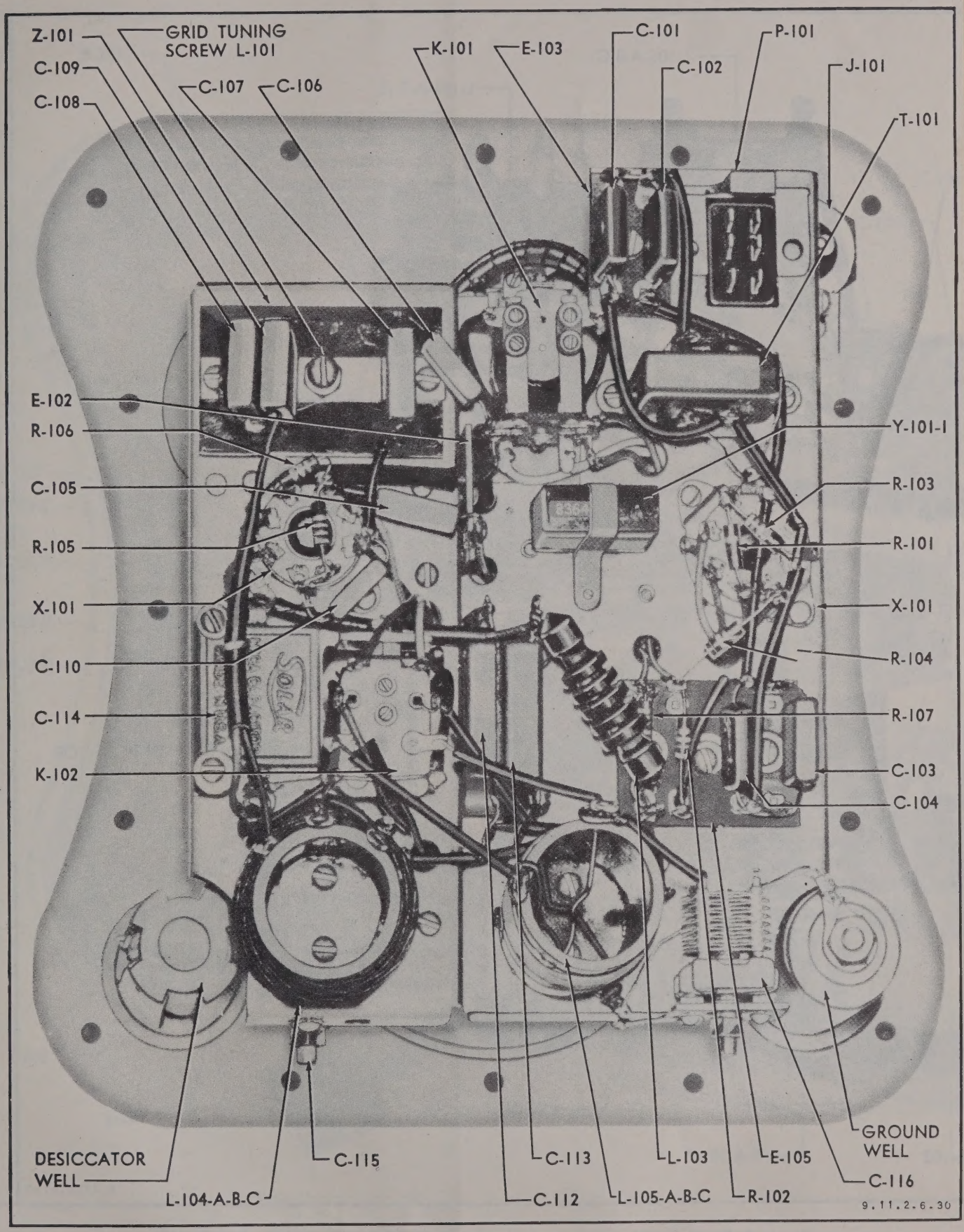
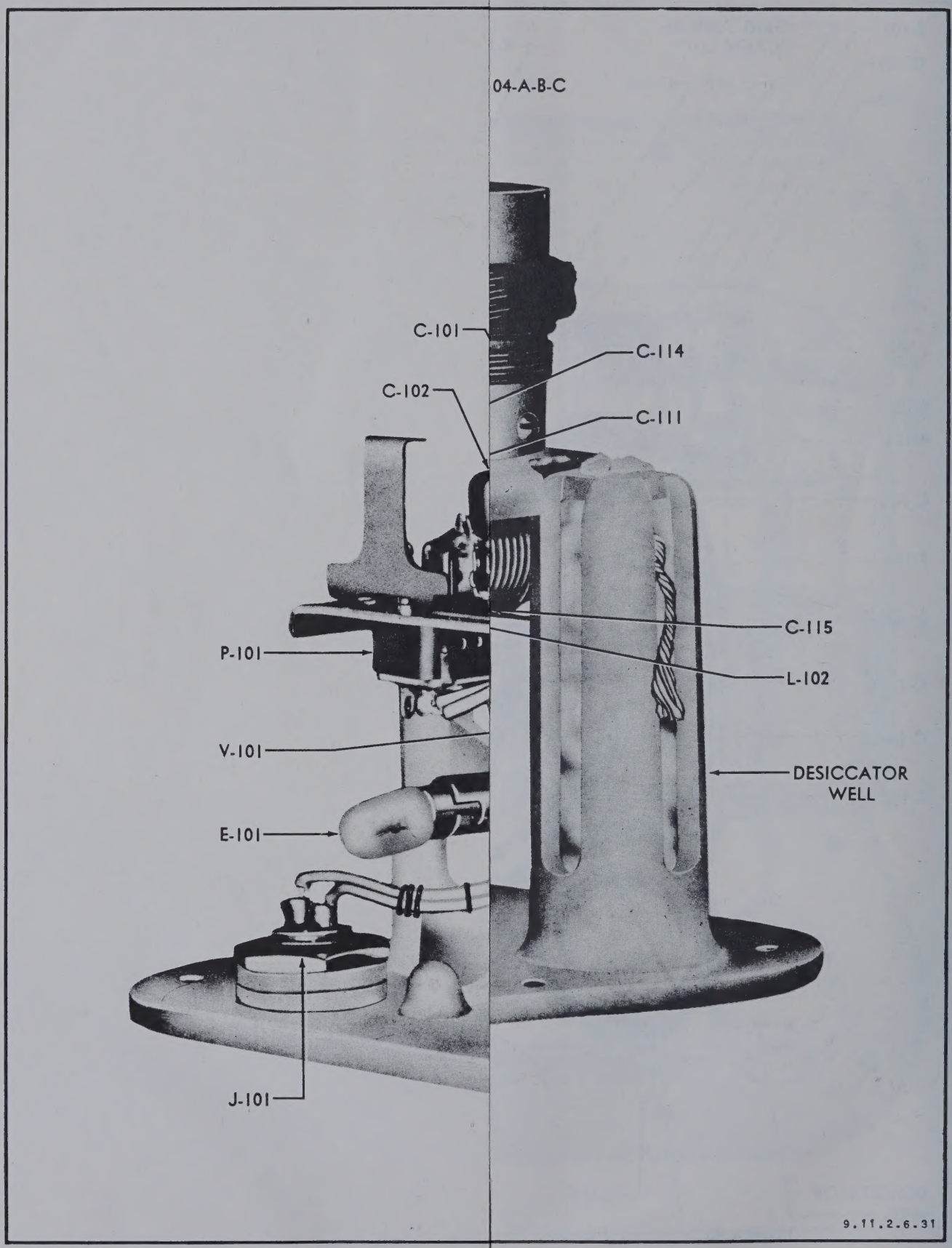


Figure 8–4. Radio Transmitter T-74/CRT-3 – Parts Layout of Cover (Top View)



– *Parts Layout of Cover (Side View,*

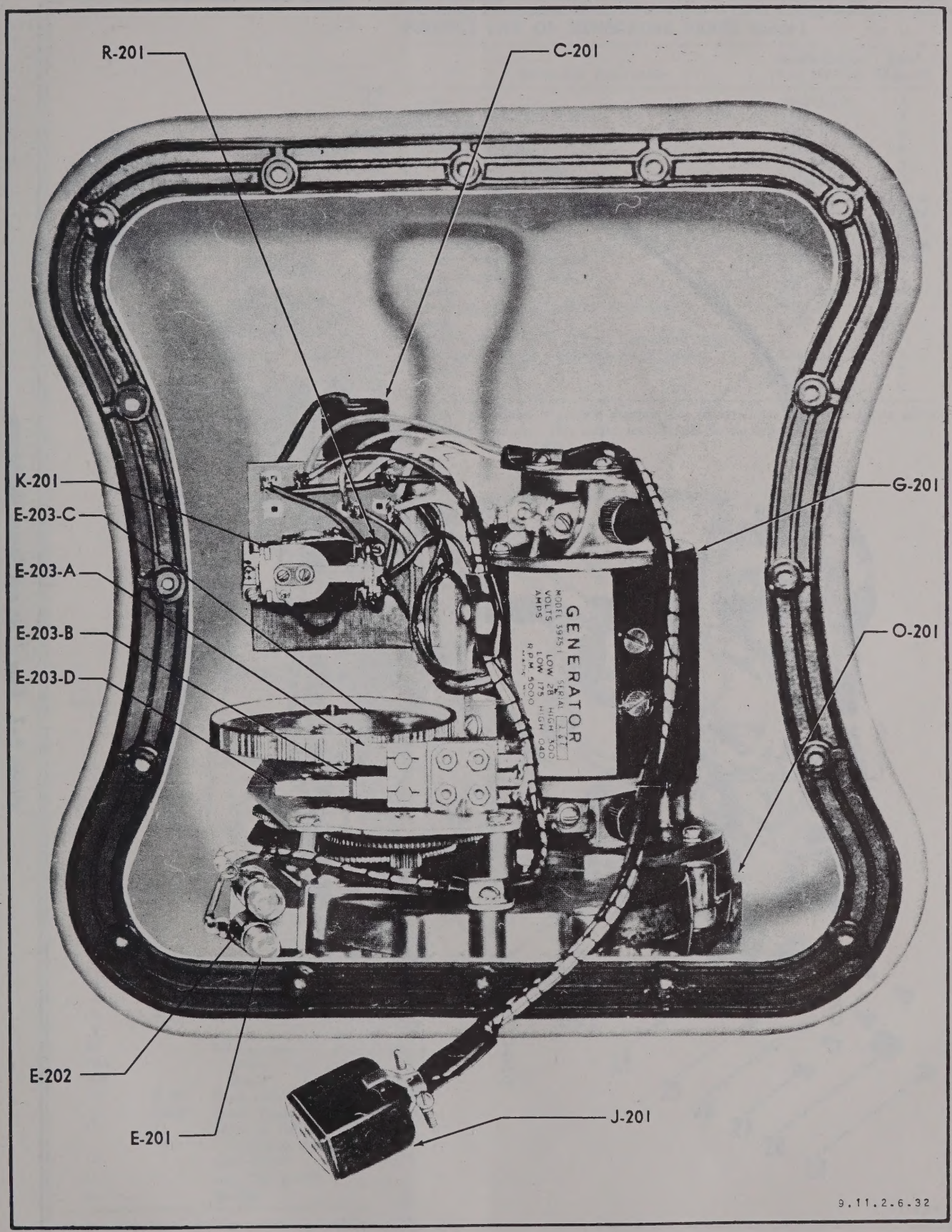


Figure 8–6. Radio Transmitter T-74/CRT-3 – Parts Layout of Cabinet

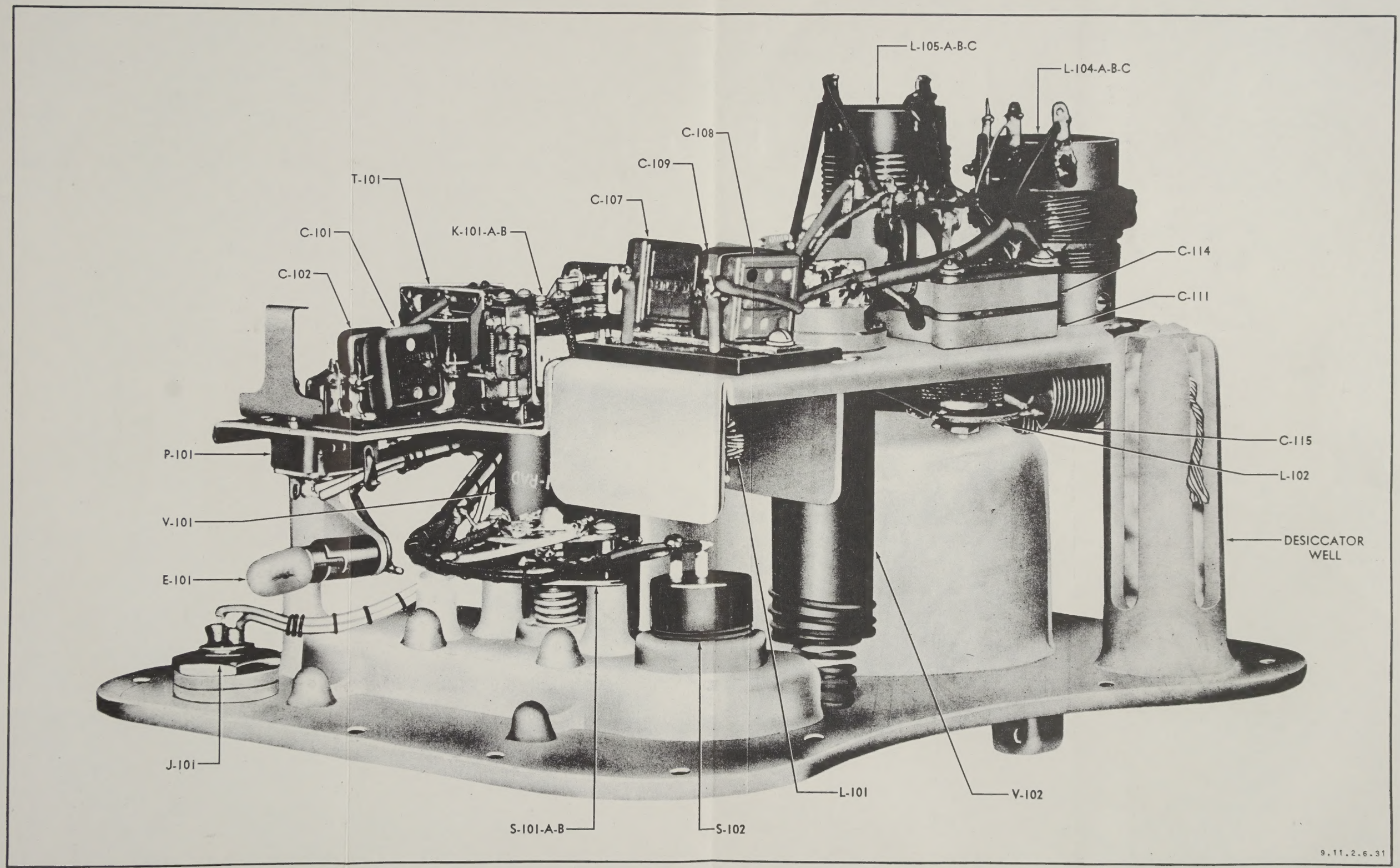


Figure 8–5. Radio Transmitter T-74/CRT-3 – Parts Layout of Cover (Side View,

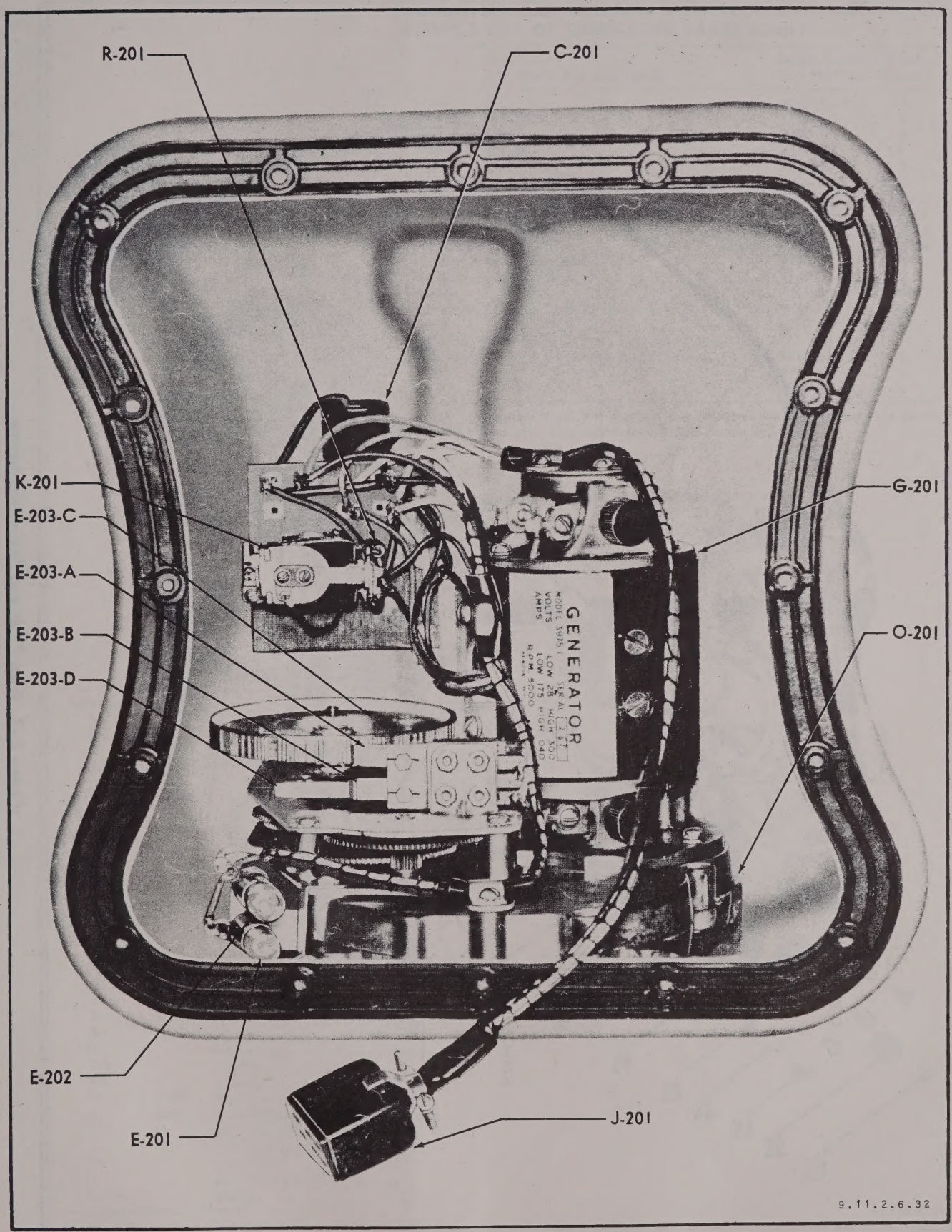


Figure 8–6. Radio Transmitter T-74/CRT-3 – Parts Layout of Cabinet

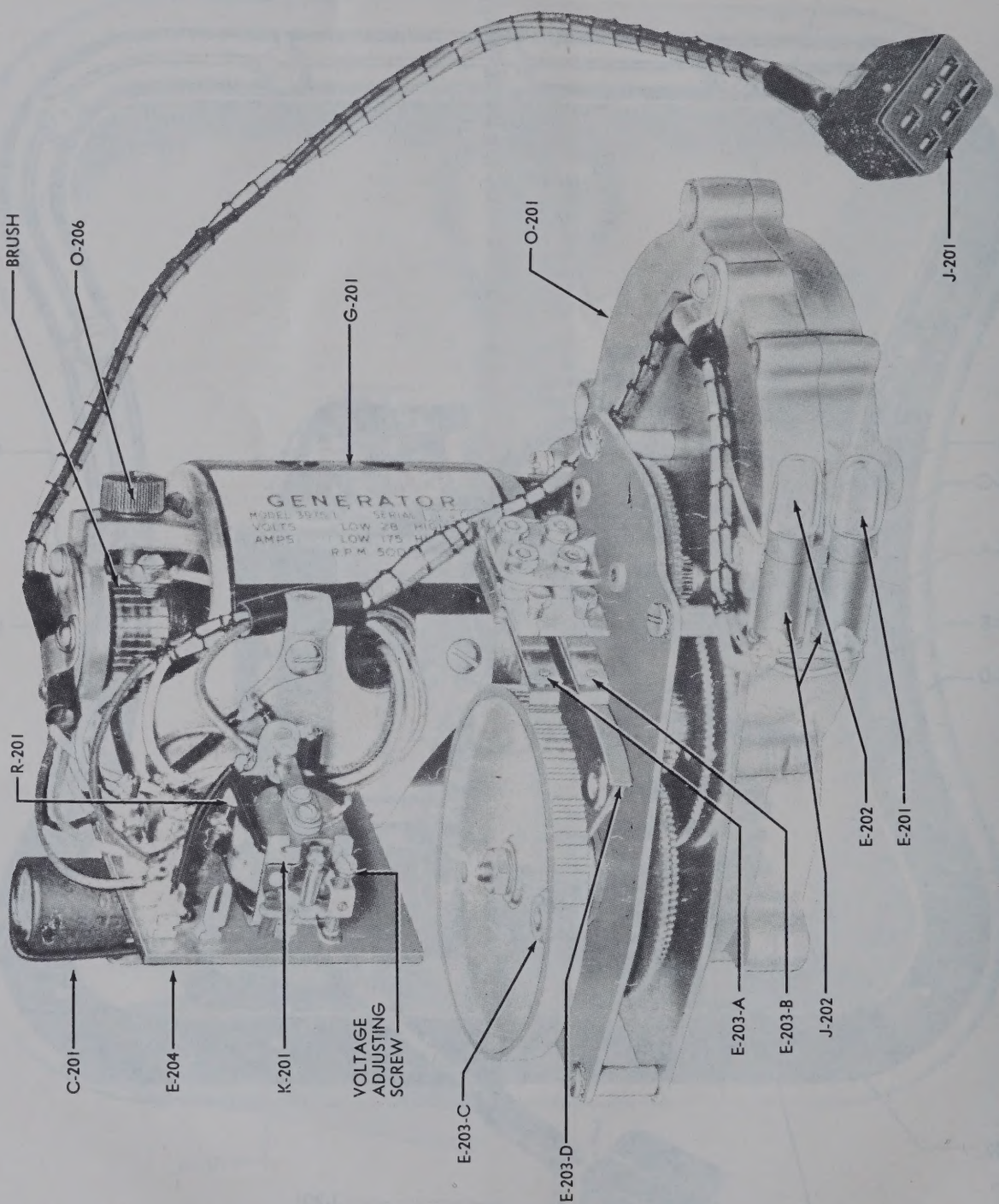
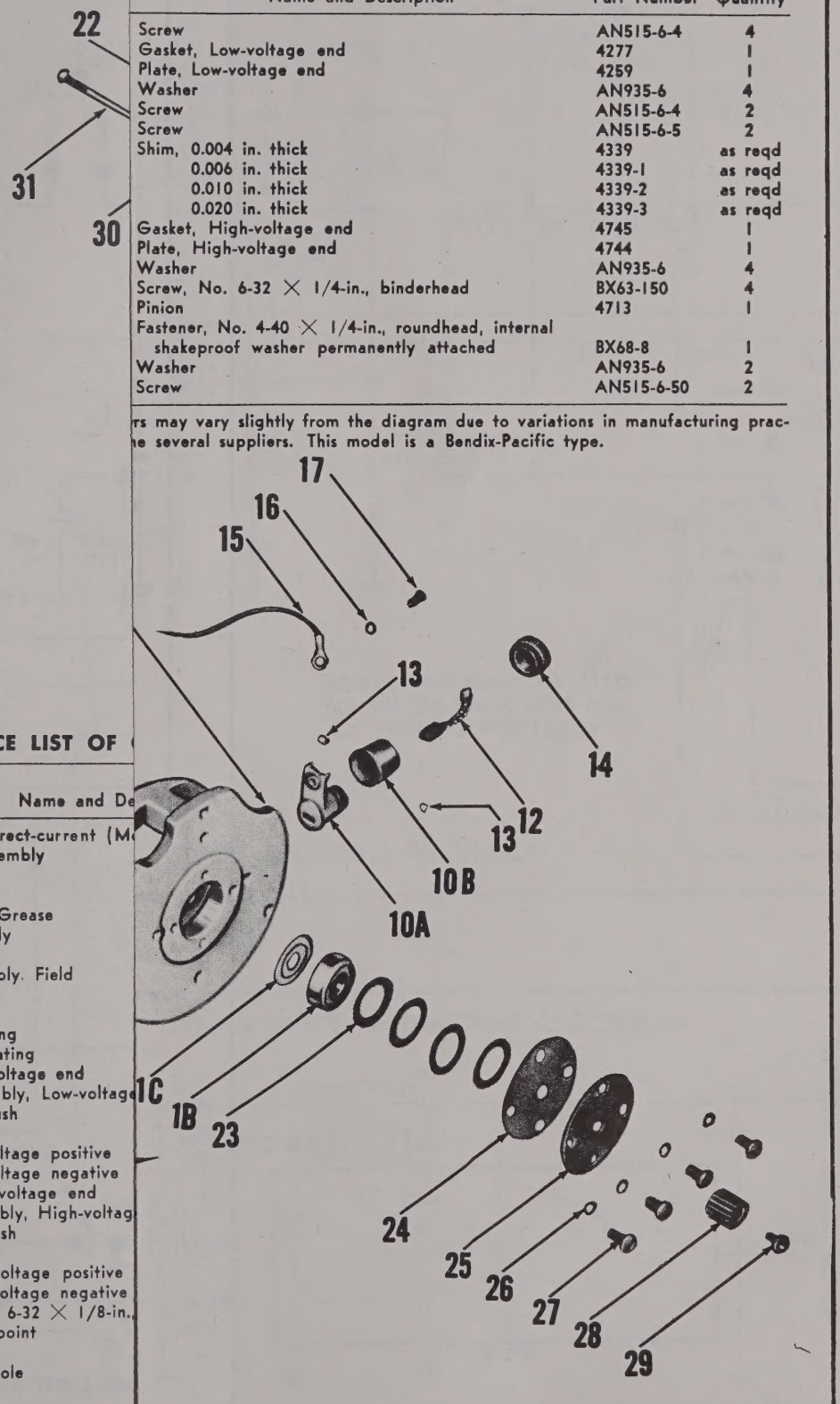


Figure 8–7. Gear Train and Keying Mechanism

FERENCE LIST OF GENERATOR PARTS (Cont)

Name and Description	Bendix-Pacific Part Number	Total Quantity
Screw	AN515-6-4	4
Gasket, Low-voltage end	4277	1
Plate, Low-voltage end	4259	1
Washer	AN935-6	4
Screw	AN515-6-4	2
Screw	AN515-6-5	2
Shim, 0.004 in. thick	4339	as reqd
0.006 in. thick	4339-1	as reqd
0.010 in. thick	4339-2	as reqd
0.020 in. thick	4339-3	as reqd
Gasket, High-voltage end	4745	1
Plate, High-voltage end	4744	1
Washer	AN935-6	4
Screw, No. 6-32 × 1/4-in., binderhead	BX63-150	4
Pinion	4713	1
Fastener, No. 4-40 × 1/4-in., roundhead, internal shakeproof washer permanently attached	BX68-8	1
Washer	AN935-6	2
Screw	AN515-6-50	2

rs may vary slightly from the diagram due to variations in manufacturing prac-
e several suppliers. This model is a Bendix-Pacific type.



REFERENCE LIST OF

Reference No.	Parts Cat. Ref No.	Name and De
	G-201	Generator, Direct-current (M
1	E-209	Armature assembly
1A		Armature
1B	O-205	Bearing
1C		Protector, Grease
2	E-210	Field Assembly
2A		Yoke
2B		Coil assembly. Field
2C		Pole
2D		Screw
3		Strip, Insulating
4		Tubing, Insulating
5		Frame, Low-voltage end
6		Holder assembly, Low-voltag
6A		Holder, Brush
6B		Sleeve
7	E-205	Brush, Low-voltage positive
8	E-206	Brush, Low-voltage negative
9		Frame, High-voltage end
10		Holder assembly, High-voltag
10A		Holder, Brush
10B		Sleeve
11	E-207	Brush, High-voltage positive
12	E-208	Brush, High-voltage negative
13		Setscrew, No. 6-32 × 1/8-in., head, cup point
14		Cap, Brush
15		Lug, No. 6 hole
16		Washer

Figure 8–8. Generator for

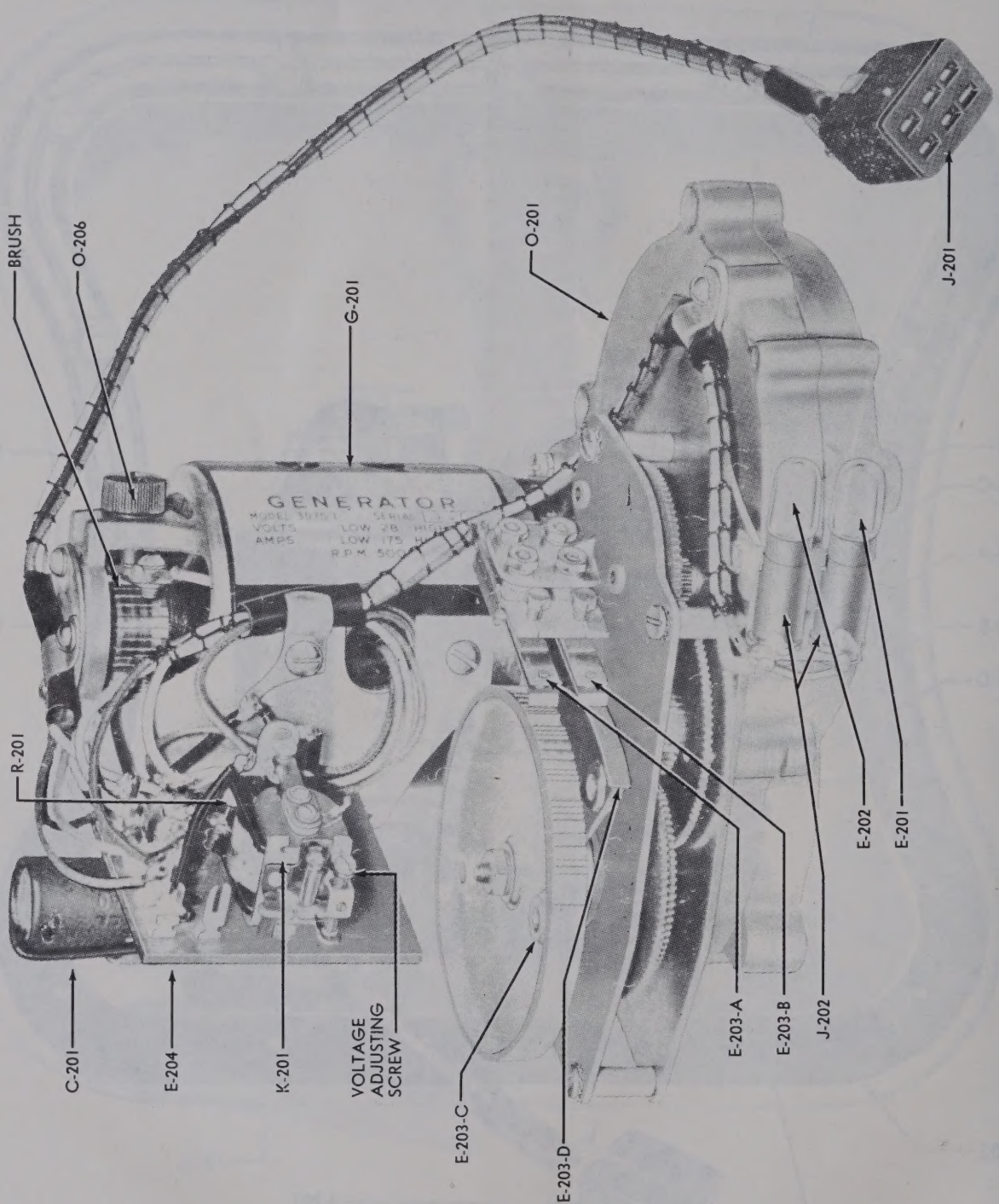
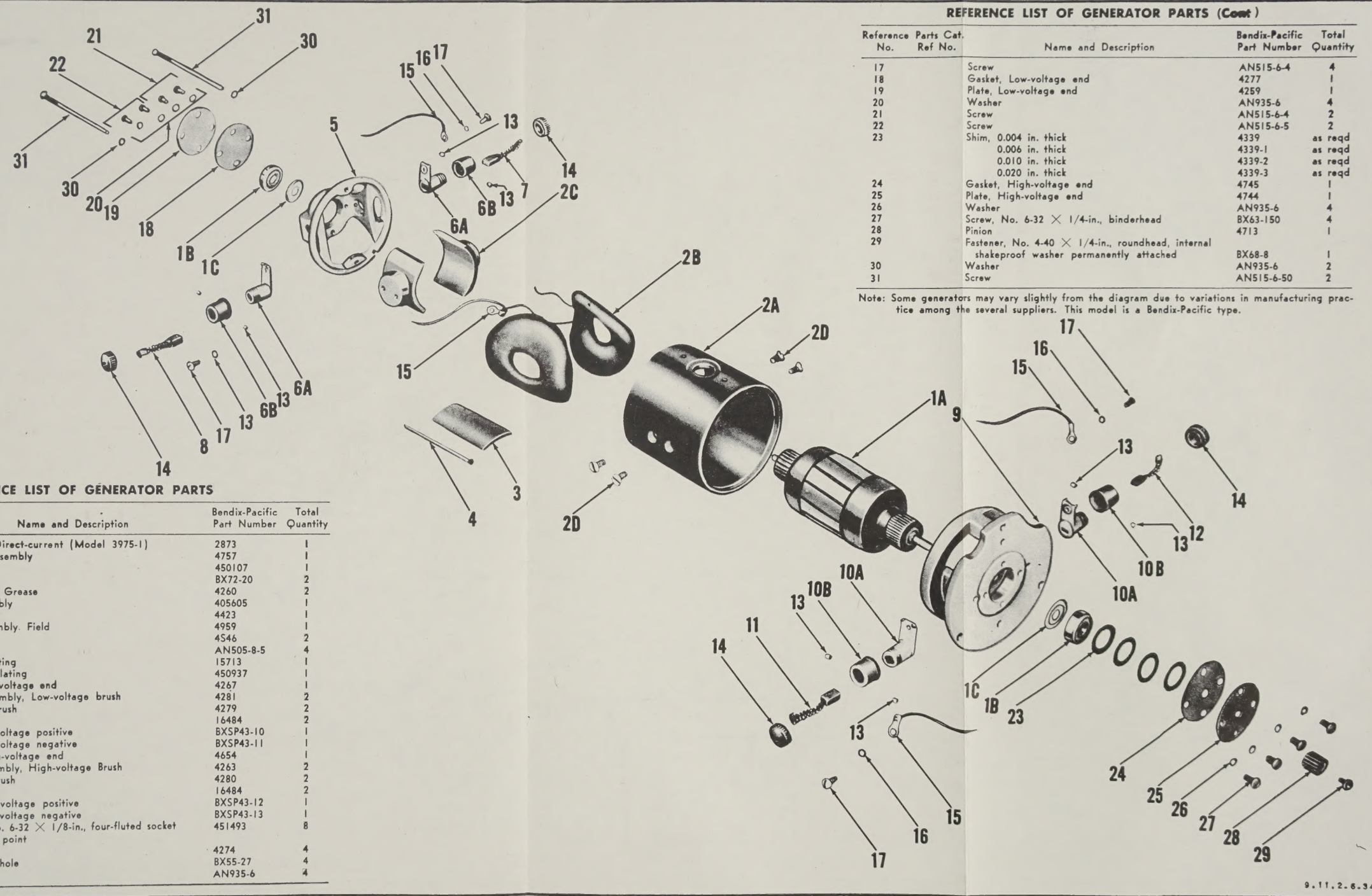


Figure 8–7. Gear Train and Keying Mechanism



REFERENCE LIST OF GENERATOR PARTS

Reference No.	Parts Cat. Ref No.	Name and Description	Bendix-Pacific Part Number	Total Quantity
	G-201	Generator, Direct-current (Model 3975-1)	2873	1
1	E-209	Armature assembly	4757	1
1A		Armature	450107	1
1B	O-205	Bearing	BX72-20	2
1C		Protector, Grease	4260	2
2	E-210	Field Assembly	405605	1
2A		Yoke	4423	1
2B		Coil assembly. Field	4959	1
2C		Pole	4S46	2
2D		Screw	AN505-8-5	4
3		Strip, Insulating	15713	1
4		Tubing, Insulating	450937	1
5		Frame, Low-voltage end	4267	1
6		Holder assembly, Low-voltage brush	4281	2
6A		Holder, Brush	4279	2
6B		Sleeve	16484	2
7	E-205	Brush, Low-voltage positive	BXSP43-10	1
8	E-206	Brush, Low-voltage negative	BXSP43-11	1
9		Frame, High-voltage end	4654	1
10		Holder assembly, High-voltage Brush	4263	2
10A		Holder, Brush	4280	2
10B		Sleeve	16484	2
11	E-207	Brush, High-voltage positive	BXSP43-12	1
12	E-208	Brush, High-voltage negative	BXSP43-13	1
13		Setscrew, No. 6-32 × 1/8-in., four-fluted socket head, cup point	451493	8
14		Cap, Brush	4274	4
15		Lug, No. 6 hole	BX55-27	4
16		Washer	AN935-6	4

REFERENCE LIST OF GENERATOR PARTS (Cont)

Reference No.	Parts Cat. Ref No.	Name and Description	Bendix-Pacific Part Number	Total Quantity
17		Screw	AN515-6-4	4
18		Gasket, Low-voltage end	4277	1
19		Plate, Low-voltage end	4259	1
20		Washer	AN935-6	4
21		Screw	AN515-6-4	2
22		Screw	AN515-6-5	2
23		Shim, 0.004 in. thick	4339	as reqd
		0.006 in. thick	4339-1	as reqd
		0.010 in. thick	4339-2	as reqd
		0.020 in. thick	4339-3	as reqd
24		Gasket, High-voltage end	4745	1
25		Plate, High-voltage end	4744	1
26		Washer	AN935-6	4
27		Screw, No. 6-32 × 1/4-in., binderhead	BX63-150	4
28		Pinion	4713	1
29		Fastener, No. 4-40 × 1/4-in., roundhead, internal shakeproof washer permanently attached	BX68-8	1
30		Washer	AN935-6	2
31		Screw	AN515-6-50	2

Note: Some generators may vary slightly from the diagram due to variations in manufacturing practice among the several suppliers. This model is a Bendix-Pacific type.

Figure 8–8. Generator for Radio Transmitter T-74/CRT-3 – Exploded View

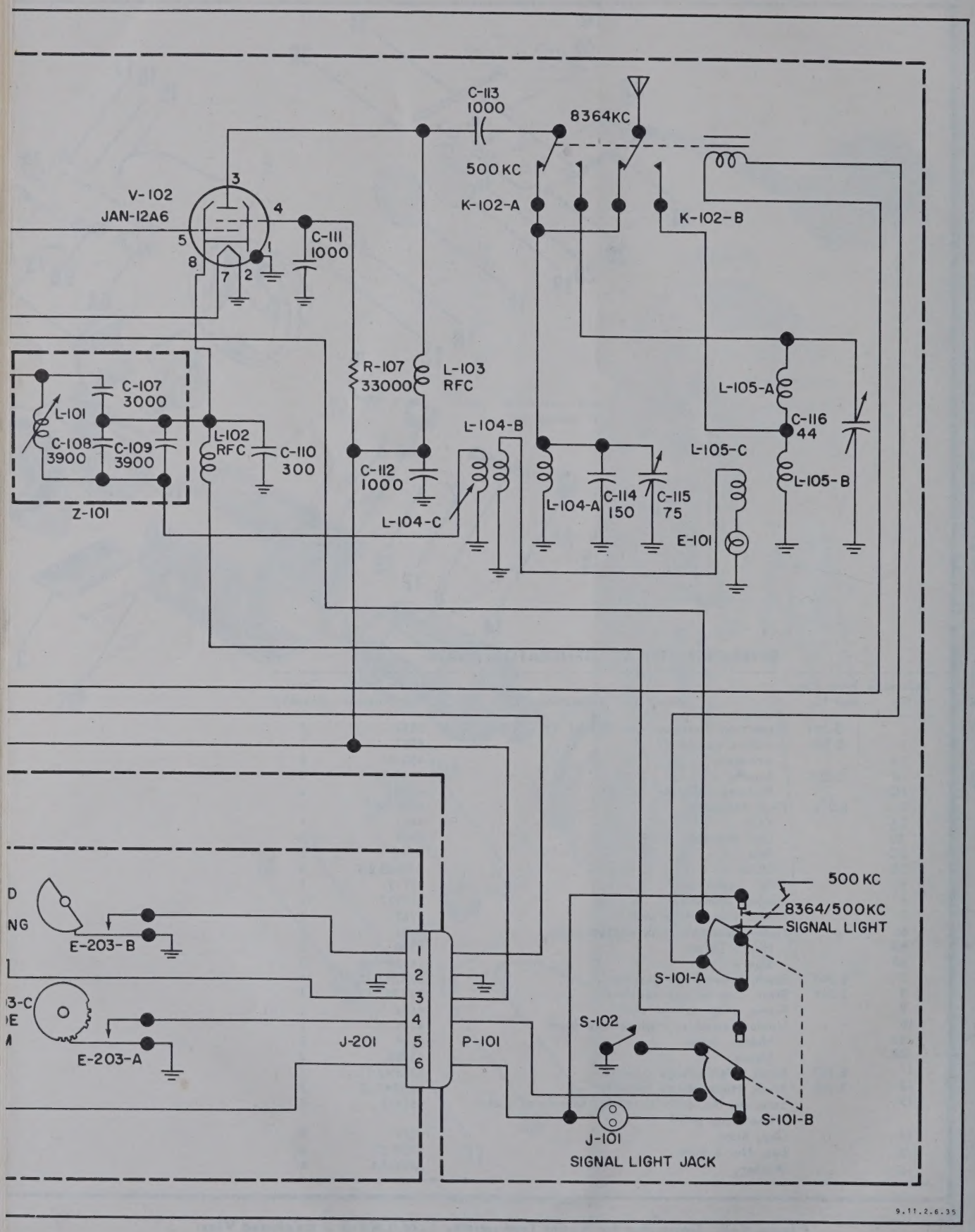


Figure 8–9. Radio Transmitter T-74/CRT-3 – Schematic Diagram

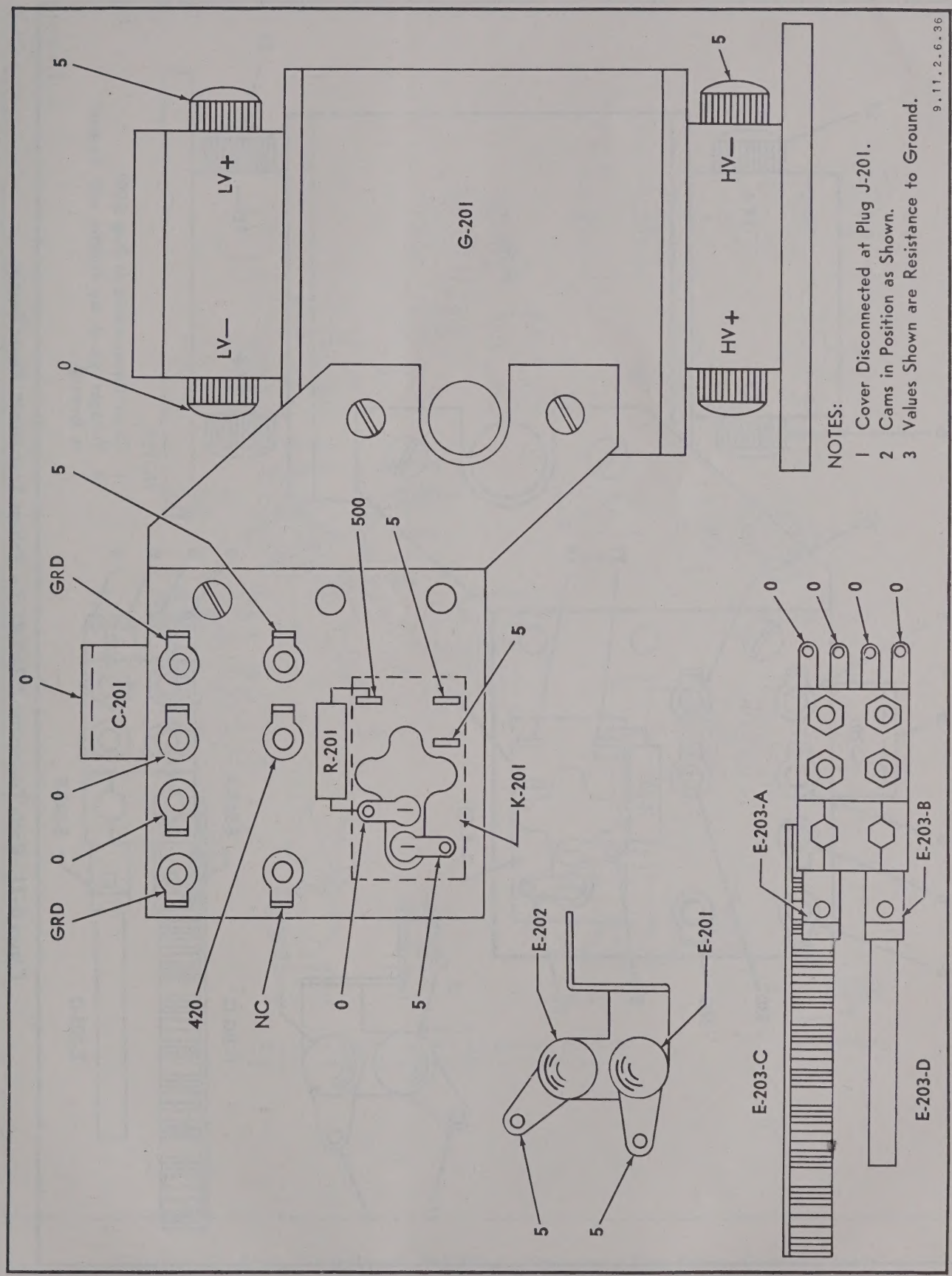


Figure 8–10. Radio Transmitter T-74/CRT-3 — Resistance Test Points, Power Supply

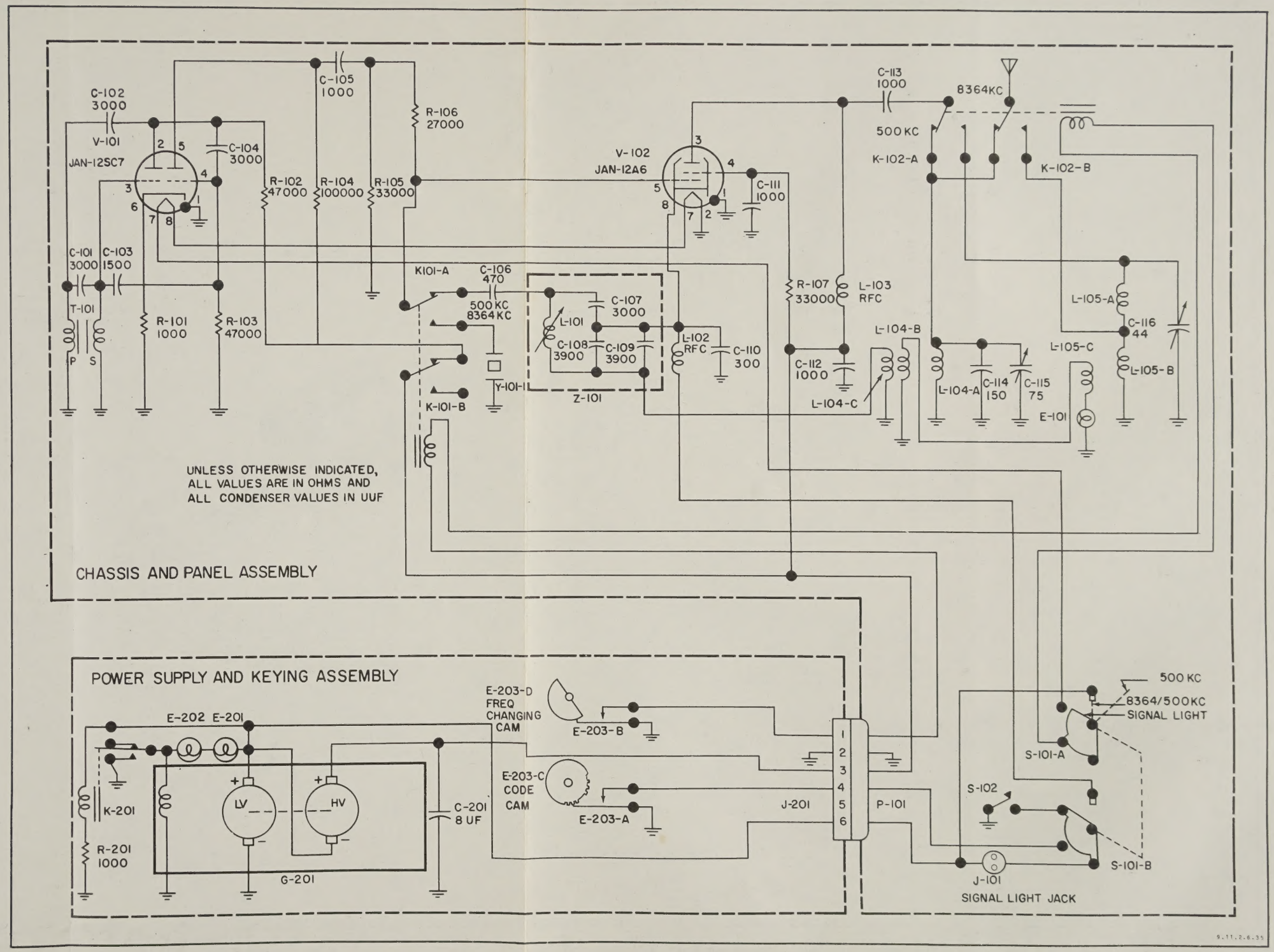


Figure 8–9. Radio Transmitter T-74/CRT-3 – Schematic Diagram

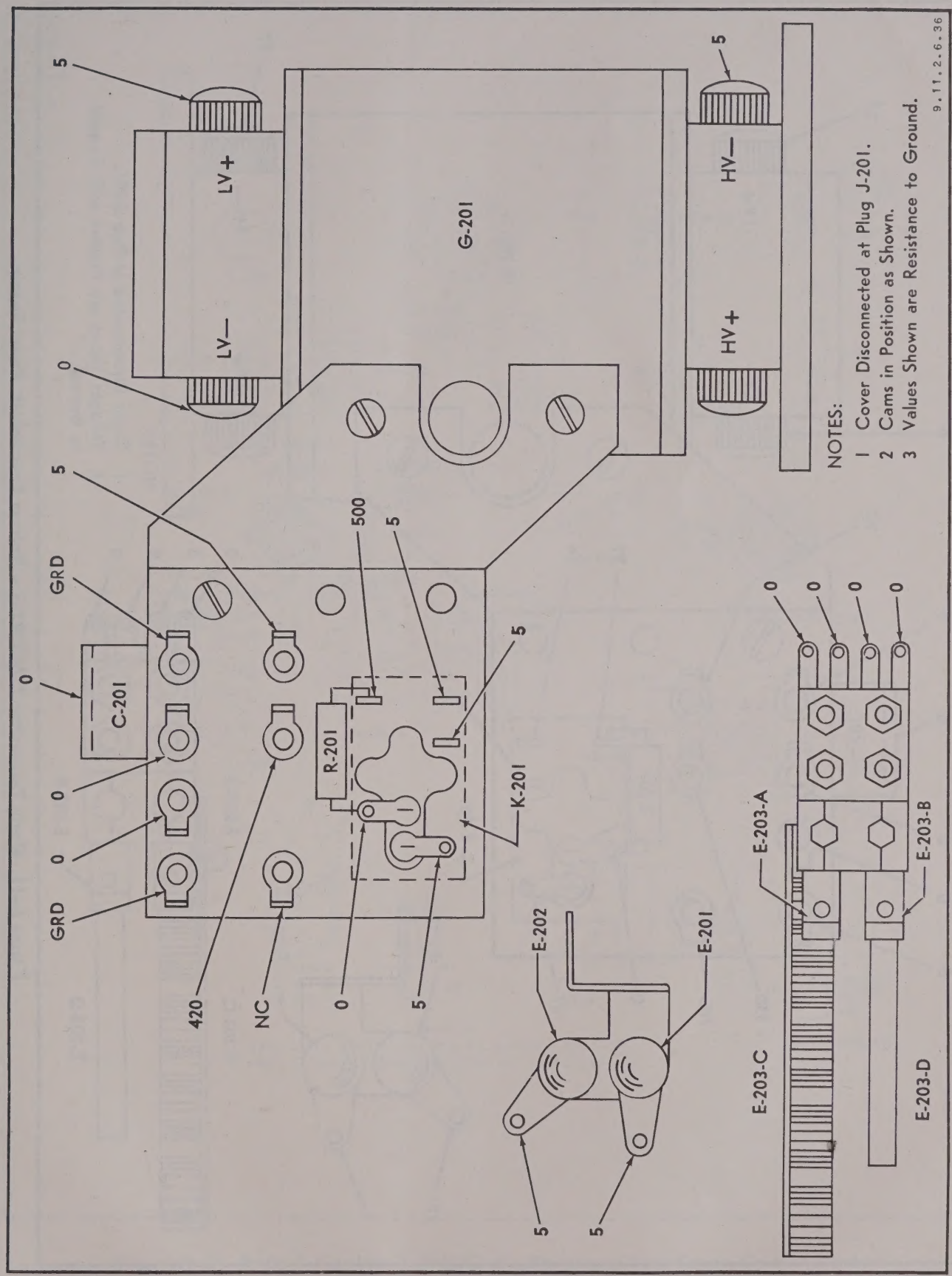


Figure 8–10. Radio Transmitter T-74/CRT-3 — Resistance Test Points, Power Supply

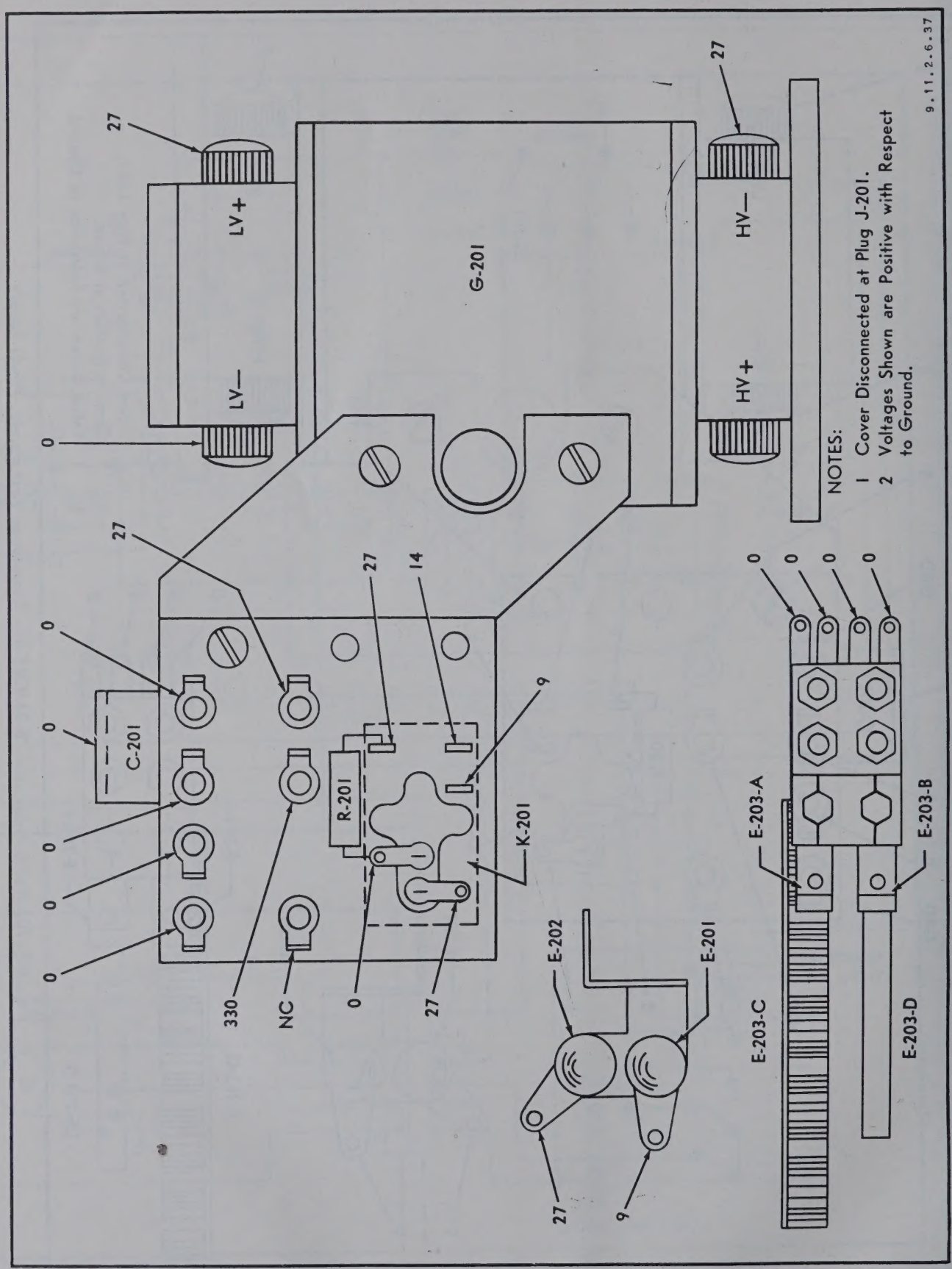
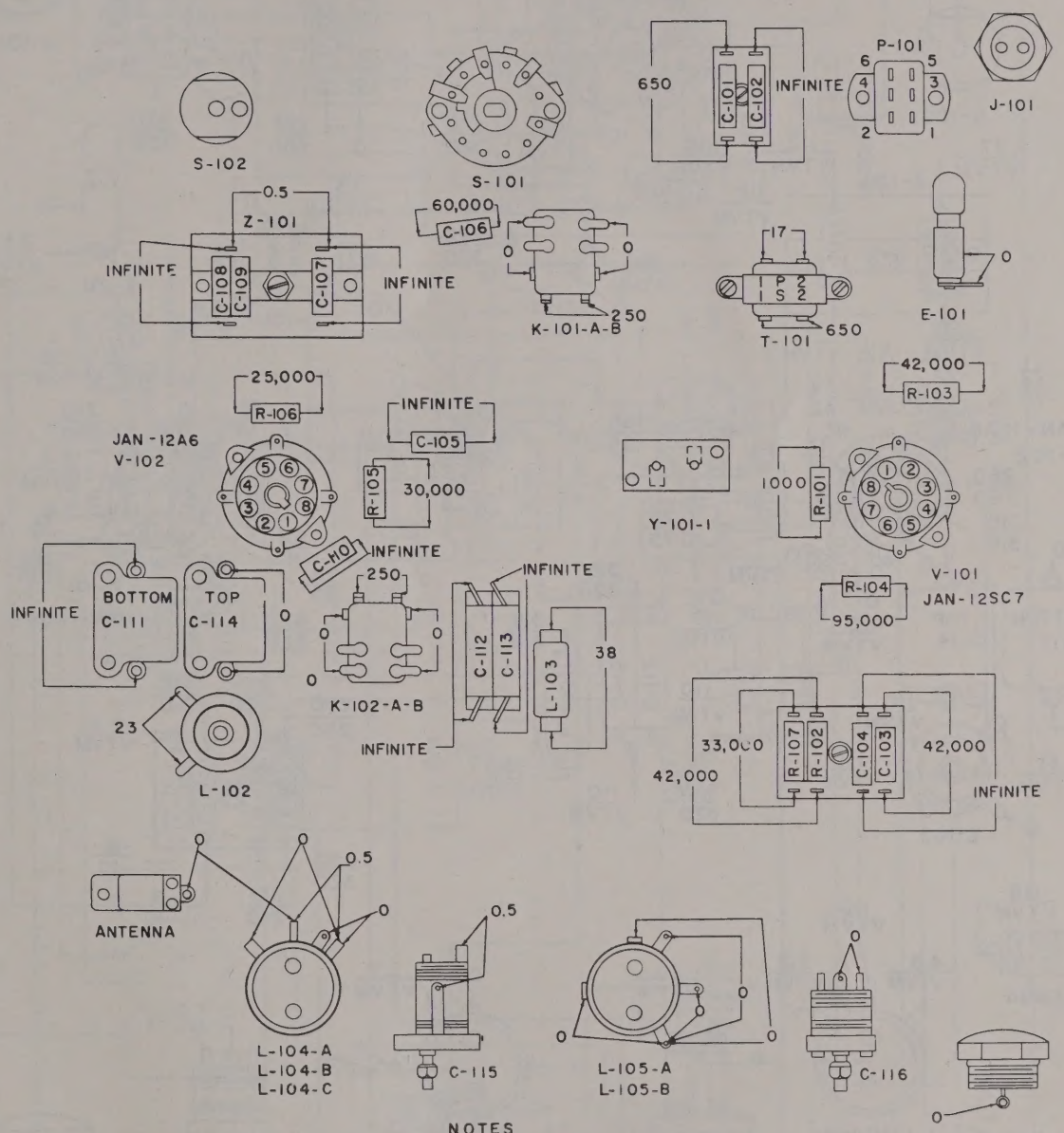


Figure 8–11. Radio Transmitter T-74/CRT-3 – Voltage Test Points, Power Supply



NOTES
1 SELECTOR SWITCH IN 500 K.C. MANUAL POSITION
2 POWER SUPPLY DISCONNECTED AT PLUG J-201

Figure 8–12. Radio Transmitter T-74/CRT-3 – Resistance Test Points, Cover Assembly

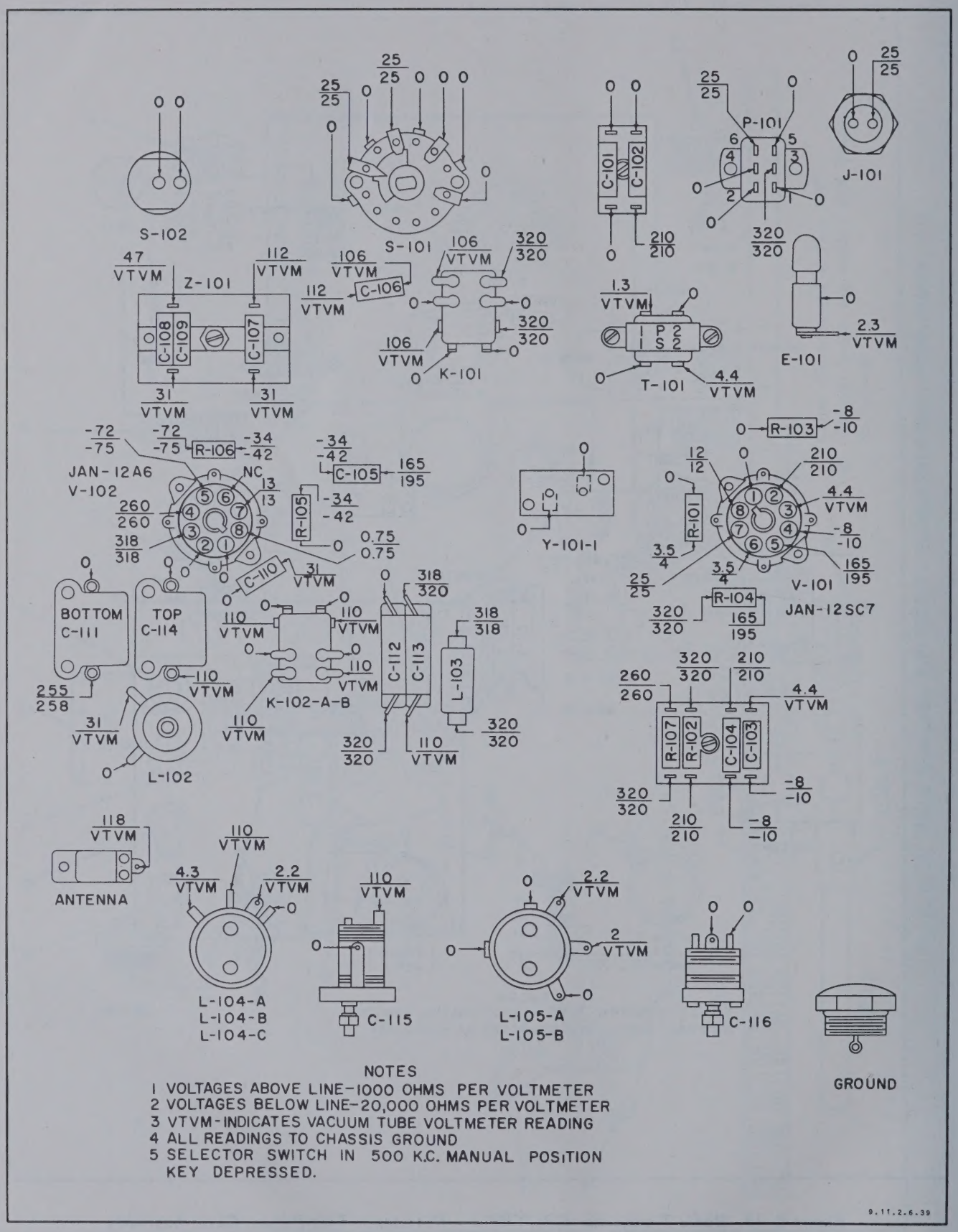


Figure 8–13. Radio Transmitter T-74/CRT-3 – Voltage Test Points, Cover Assembly

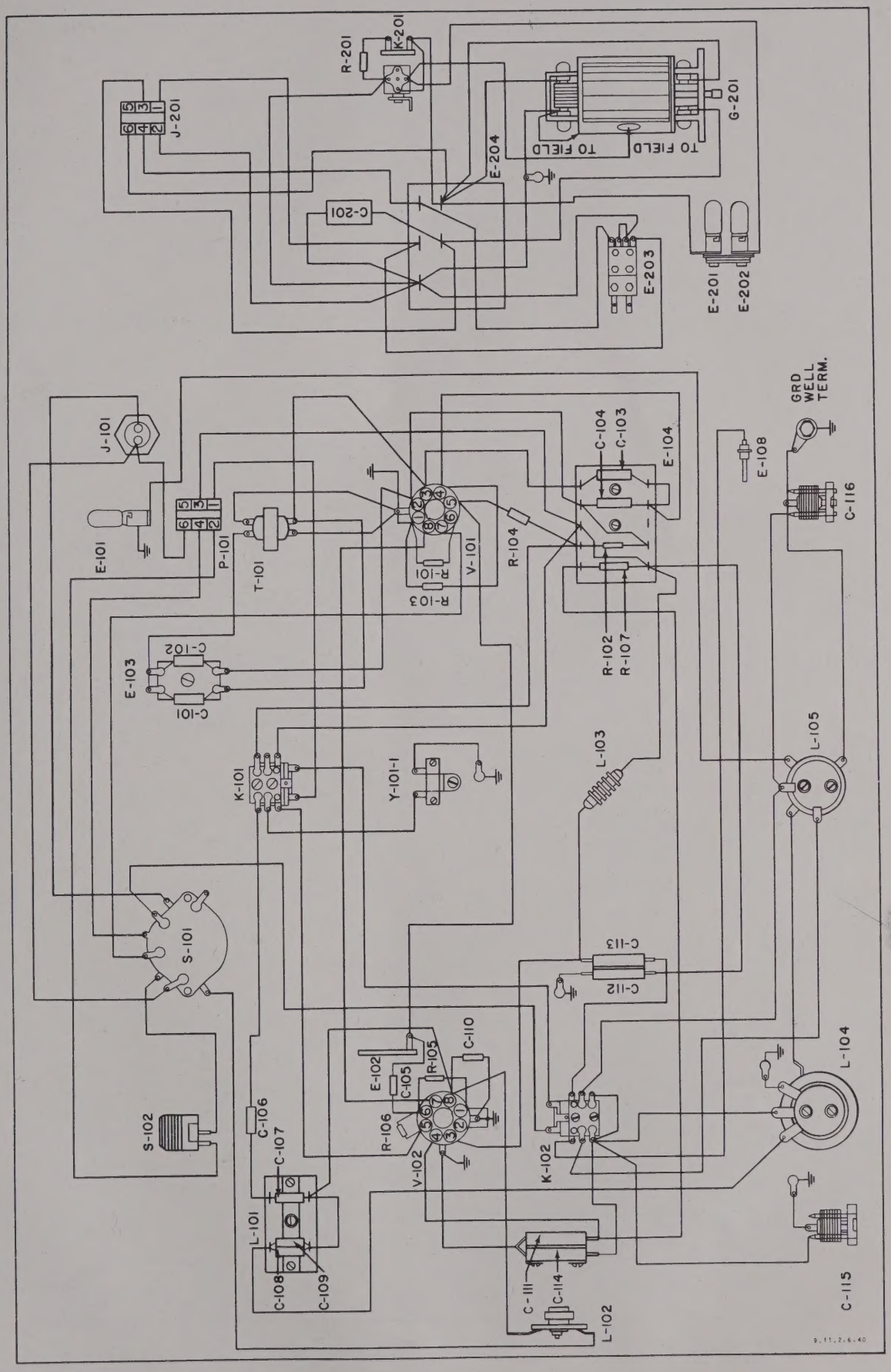


Figure 8–14. Radio Transmitter T-74/CRT-3 – Practical Wiring Diagram